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ABSTRACT

Activities of the Test Development and Research Office (TEDRO), a division of the West African Examinations Council (WAEC), are described. The WAEC is an international educational and professional testing organization established to serve its four member countries: Nigeria, Ghana, Sierra Leone, and The Gambia. The U.S. Agency for International Development supports WAEC's program of research and development performed to introduce large-scale testing programs to West Africa. The tests are used primarily for manpower selection and for assessment of academic achievement as related to graduation requirements, college entrance, Civil Service employment, and occupational certification. TEDRO has three primary responsibilities: to initiate and coordinate all objective test development, to establish aptitude testing services, and to plan and execute research on tests and testing procedures. The history and development of testing organizations in West Africa, as well as training and research activities, are described. Particular emphasis is given to TEDRO programs completed through December 1968. Studies investigating the validity of TEDRO-developed aptitude tests are summarized. (GDC)

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test development and research: west african examinations council (1965-1968)

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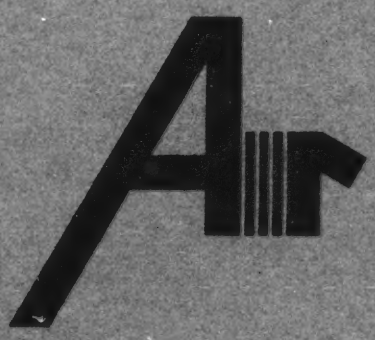

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COOPERATING COUNTRY/AGENCY:	NIGERIA/WEST AFRICAN EXAMINATIONS COUNCIL
PROJECT TITLE:	TEST DEVELOPMENT AND RESEARCH (formerly "APTITUDE TESTING PROGRAM")
PROJECT ACTIVITY NUMBER:	620–11–690–746
CONTRACTOR:	AMERICAN INSTITUTES FOR RESEARCH 135 North Bellefield Avenue Pittsburgh, Pennsylvania 15213

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1. INTRODUCTION AND BACKGROUND

A. USAID Program in West Africa

United States assistance to developing nations is based on the assumption that the world community should be committed to freedom and independence of nations. Assistance programs of the United States assume that the independence of each nation, the freedom of peoples, and economic and social development are the best assurances of stability for the world community. The United States, through USAID and other agencies, has thus made available economic and technical assistance to a number of West African nations.

American assistance is usually offered as (1) long-term capital undertakings, such as construction of roads, power plants, and large building projects, or (2) the financing of developmental projects in education, agriculture, industry, public administration, and related fields. These latter projects improve educational, professional and technical skills, and develop the institutions to continue the work. USAID funds bring American professional advisors and specialists to reside and work in West Africa, send West Africans to the United States for training, and provide for on-the-job training within West Africa. Funds may also be used for some costs of building and equipping new facilities.

Every project must fulfill a recognized social or economic need within the host country. West Africans are asked to support these projects by sharing a substantial portion of the costs and by providing West African personnel for counterpart training. Projects are coordinated with the developmental plans of the nation concerned, and every project is designed to meet specific objectives that fit long-range plans. Some projects serve more than one nation, and may be funded under special regional assistance programs within AID. Projects are initiated by request of governmental officials, and this assures that governments can accomodate continuing financial commitments within normal budgeting resources after United States assistance is terminated.

B. American Institutes for Research

Since 1961 the American Institutes for Research (AIR) has provided technical assistance to the USAID program in West Africa. AIR is a small, independent,

non-profit, scientific and educational research organization. Its major purpose is to conduct comprehensive programs of research and development on socially important problems. The corporate office is in Pittsburgh, Pennsylvania, and there are operational offices in Pittsburgh, Pennsylvania; Washington, D. C.; and Palo Alto, California. In addition, AIR personnel reside in other countries of the world, working on a number of research projects. AIR staff have served in Brazil, Ecuador, Liberia, Nigeria, South Korea, Venezuela, India, Iran, and Thailand. The staff includes over 375 professional personnel trained in psychology and related disciplines. The work of the professional staff is supported by a variety of administrative, clerical, and technical personnel.

C. Project History

This is the final report for a project which was the third phase in a program of technical assistance in test development and research. The project was sponsored by USAID through several contracts with AIR. The three phases were directed toward the research and development necessary to introduce into West Africa large-scale objective testing programs for manpower selection and for assessment of educational achievement.

The first phase of the program began in 1960 and extended thirteen months to June 1961. This was a feasibility study to determine whether group-administered objective aptitude tests could be used for manpower selection in West Africa. The preliminary study provided encouraging results, and USAID extended the project to transform the prototype tests into an operational program which would focus on manpower selection problems in Nigeria, develop additional areas of research, and further refine testing procedures and applications. The program was extended for two additional years. During the 1961-1963 period substantial progress occurred; more tests were developed to cover additional essential occupational aptitudes. A further extension was the development of a complete set of testing materials with all necessary forms, manuals, and supplementary materials ready for immediate application. More than 125 forms, practice sheets, test papers, scoring stencils, visual aids, technical manuals in both English and French, and miscellaneous items, were provided in these sets. This development is regarded as the end of the first phase of the program.

In 1964 USAID/Nigeria initiated a second phase of support through a contract for the establishment at Lagos, Nigeria of the Nigerian Aptitude Testing Unit (NATU). Until November 1964 all work on the testing program had been funded through an AID regional contract. It had been expected that a regional concept of operation would take the tests already developed and apply them to all of West Africa. There were, however, no organized local institutions, no trained personnel, and no sponsors for such a broad program in West Africa. At a workshop held in Lagos in 1963, to determine how the testing program thus far developed could be utilized as an instrument in the selection of manpower, the idea emerged of an aptitude testing unit, and NATU was thus inaugurated, and planned to operate under the aegis of the West African Examinations Council (WAEC). It was the development of NATU that constitutes the second phase of the testing program. NATU used the aptitude tests developed during the first phase and recruited and trained West African measurement experts to staff the Unit. These experts were trained under a coordinated USAID participant training project. On this coordinated project, USAID/Nigeria sent six Nigerian Education Officers to study for the master's degree in Educational Measurement at the University of Pittsburgh. They were all awarded degrees in August 1963 or shortly thereafter.

The third phase of the program, and the one herein reported, began in January 1965. NATU had functioned under a loose association with WAEC. Testing activities of NATU, however, developed rapidly. Its educational testing began to duplicate educational selection programs of WAEC, mainly in the area of common entrance examinations for selection into secondary schools. It thus became more efficient to merge the former Objective Testing Unit (OTU) of WAEC with NATU to form a new office within WAEC: The Test Development and Research Office (TEDRO). It was the work of establishing and maintaining TEDRO that has primarily formed the third phase of the testing program.

The availability of aptitude testing programs to all of English-speaking West Africa will be more fully realized in a fourth-phase project in a continuation of the present testing program. A regional agreement between AID, WAEC, and AIR will bring the tests and the testing expertise of the previous

years into a widening area of manpower and educational selection throughout English-speaking West Africa. This new phase begins January 1969 and will continue for four years, with its principal objectives being the consolidation and further growth of TEDRO and of objective testing applications throughout West Africa.

A most important aspect of the earlier West African testing program has been its extension into a world-wide testing program through contract AID/csd-798 which carries to Brazil, South Korea, and Thailand the test development and research begun in West Africa. Work is progressing in all these areas on professional development of personnel and on development of manpower selection institutions.

D. Previous Reports Submitted

The following reports have been submitted on this project.

Report	Period Covered
Semi-Annual	Jan 1965-Jul 1965
Semi-Annual	Aug 1965-Mar 1966
Semi-Annual	Apr 1966-Dec 1966
Semi-Annual	Jan 1967-Jun 1967
Semi-Annual	Jul 1967-Dec 1967
Semi-Annual	Jan 1968-Jun 1968
Semi-Annual	Jul 1968-Dec 1968
Final	Jan 1965-Dec 1968

E. Document Depository

Documents under Section 1.D are kept by the Pittsburgh Office of AIR. For information concerning the documents address inquiries to:

Director of International Studies
American Institutes for Research
135 North Bellefield Avenue
Pittsburgh, Pennsylvania 15213

During the course of the contract many documents have been produced in addition to the reports listed in Section 1.D. These include reports on

research projects, office activities, tests and test manuals, and other items of relevance to a test development office. Forthcoming items of interest are too numerous to list here, though some impression of the scope is available from this and previous reports. Further information can be obtained from

The Director
Test Development and Research Office
West African Examinations Council
Private Mail Bag 1076
Yaba, Lagos, Nigeria

F. Scope of Final Report

This final report covers two functions and two periods. It is the Final Project Report for AID/afr-199, Task Order No. 3 (14 January 1965 to 31 December 1968), and a brief Semi-Annual Report of activities on the project for the previous six months (i.e., 1 July 1968 to 31 December 1968).

The major work on the project has taken place within WAEC. Because of this, considerable detail is presented on the Council. It is not possible to understand the activities of the project without some background concerning the Council. More specifically, the project activities took place within a research and development setting devoted to the production and application of objective tests and particularly aptitude tests. Two institutions arose to accomodate these research and development efforts: NATU and TEDRO.

Cooperatively with the above organizations, USAID and AIR have developed the use of objective tests in West Africa. This report constitutes a brief history of the assistance given by USAID, through AIR, to objective test development activities of the West African Examinations Council.

2. THE WEST AFRICAN EXAMINATIONS COUNCIL

The West African Examinations Council is an international educational and professional testing organization established by statute within its four member countries: Nigeria, Ghana, Sierra Leone, and The Gambia. The governing body of the Council is composed of a Chairman and a group of Council Members. Membership of this governing body is composed of nominations from the following sources: the Government of The Gambia (two), The Gambia National Committee (one), the Government of Ghana (four), the Ghana National Committee (five), the Government of Nigeria (four), the Nigeria National Committee (eight), the Government of Sierra Leone (three), the Sierra Leone National Committee (two),

and one each from the Universities of Cambridge and London. The Council's ordinance is presently being amended to admit Associate Members to join, and to add a Council member from each university in every member country.

A. Purpose

The primary function of the Council is to provide certificates of educational achievement based upon syllabuses which are approved by the Council. The present system of secondary education in the Council's member countries was adapted from the British system, in which secondary school instruction is geared to examinations conducted by an examining body external to the school system.

B. History

When established in 1953 the West African Examinations Council primarily administered examinations which were written and graded by British examining bodies. It has since gradually assumed examining functions earlier performed by these bodies. The Council grew from an initial graduate staff of 5 in 1953 to 75 in 1968. The Headquarters Office is in Accra and subsidiary national offices are in Accra, Lagos, and Freetown. There is also a London Office and in Lagos is located the Test Development and Research Office. The Council now serves The Gambia through its Ministry of Education, but a separate office will be established there whenever justified by the volume of testing.

C. Committee Structure

The committee structure of the Examinations Council is shown in Table 1 (page 49).[1] There are two main groups of committees within the Council: those responsible for the total affairs of the Council, and those limited to affairs of a single country. Because of its size, the committee structure in Nigeria is more complex than other member countries of the Council. Most committees meet annually, some meet semi-annually, and others meet several times a year on an ad hoc basis.

D. Scope of Operations

The single most important examination of the Council is the Joint Examination for the West African School Certificate and the General Certificate of Education - O Level. This examination is given to candidates who have

[1] All tables appear at the end of this report.

completed five years of an approved secondary school and to private candidates. It is based on subject syllabuses common to the Council's member countries. Successful candidates may receive either the West African School Certificate (WASC), or the General Certificate of Education at the Ordinary Level (GCE/O Level). The WASC requires successful performance in a number of academic subjects. The GCE/O Level is an examination in a single subject in which the results of each subject are simply reported and no specific combination of subject papers must be passed. In 1968, more than 36,000 candidates took this examination. This examination is important as many universities in West Africa and in Britain recognize credits in this examination as equivalent to those in the School Certificate awarded in Nigeria jointly by the Cambridge Syndicate and the Council, and to Ordinary-Level passes in the GCE examinations of the British examining boards. Papers for the GEC/O Level, administered in June and November each year, are developed and marked entirely in West Africa. In 1966, responsibility for the examination was for the first time entirely in the hands of the Council, the London and Cambridge examination synidcates having shifted to advisory roles.

The Council administers the Ghana Middle School Leaving Certificate Examination on behalf of the Ghanian Ministry of Education. This examination was taken by 61,000 candidates in 1968. Common entrance examinations for admission into secondary schools are administered in each member country of the Council. In 1968 these examinations were taken by over 185,000 candidates.

The General Certificate of Education, Ordinary Level (London) is administered by the Council on behalf of the University Entrance and School Examinations Council of the University of London. It is a single subject examination open to private candidates, i.e., students not enrolled in an approved secondary school, as well as to school candidates. In 1968 this examination was taken by 40,000 candidates. The Council conducts the University of London General Certificate of Education - Advanced Level Examination and the Higher School Certificate Examination (Cambridge), which are single subject examinations taken on completion of two years of Sixth Form. Both are set and marked primarily in England. The Council will assume responsibility for these examinations in the next few years.

The Council conducts both the selection and the certificate examinations for teacher training intitutions in Ghana and Nigeria. In 1968 about 15,000

candidates in Nigeria took the Nigerian Teachers' Higher Elementary (Grade II) Certificate Examination. For the same year in Ghana 65,000 candidates registered for the Entrance Examination to Teacher Training Colleges in Ghana, and 3,000 for the Final Examination for Teacher Training Colleges in Ghana.

Technical and commercial examinations are administered by the Council on behalf of several British examining bodies. The Council is revising the examinations' syllabi and will eventually assume full responsibility for them.

Public service and Military examinations are administered by the Council on a limited scale in Ghana, Sierra Leone, and Nigeria. The Council also conducts a large number of small special examinations for other examining bodies.

Graphic illustrations of the growth and scope of the Council's activities are given in Tables 2, 3, 4, and 5 (pages 50 through 53). These tables show the growth of the Council in terms of number of candidates, number of candidate papers, number of papers marked in West Africa, and annual recurrent expenditure.

E. Personnel

The numbers and types of personnel on the approved staff of the Council are shown in the table on page 9, and are for the year ending 31 March 1968. These are the latest accurate available figures at the time this report is being written. They indicate a total of 522 staff members. There has been a continual increase in the size of the approved staff over the past few years and this trend will almost certainly continue.

Council personnel are governed primarily by the civil service regulations of the country in which they serve. All but three of the Council staff are West Africans, and there have been no more than five advisors assigned at any one time to the Council during the past several years.

F. Budget

Fiscal aspects of the Council are rather complex. Support is received from many sources, including candidate fees for examinations, fees paid for examinations by government agencies, profits on the sale of publications, contributions, grants from the participating governments, and external

Approved Staff:
West African Examinations Council
(31 March 1968)

Offices	Academic and Administrative Staff	Executive Staff	Clerical Staff	Technical Staff	Others*	Total Staff
Headquarters	15	3	14	-	7	39
Test Development and Research Office	14	3	18	2	12	49
Ghana Office	10	22	72	22	32	158
Nigeria Office	19	39	118	35	39	250
Sierra Leone Office	3	3	7	-	8	21
London Office	2	1	1	-	1	5
Total	63	71	230	59	99	522

*Daily rated staff, e.g., drivers, messengers.

support from the United States and Britain. The annual income of the Council in recent years has been approximately $3,000,000, including the equivalent of about $150,000 for technical assistance from the United States and Britain. The Council has a steadily increasing budget due to a gradual increase in the number of examinations given. The financial position of the Council is firm, particularly since it has full support of the participating governments. Although examination fees do not presently cover all operating expenses, and government support is needed for the Council's continued operation and expansion, it is expected that the Council will be financially independent within the next several years.

G. Expected Development

The future of the Council is related to the anticipated development of West African nations. The four countries served by the Council are rapidly progressing in primary, secondary, and higher education. Increasing numbers

of students at all levels, plus an increased awareness of the importance of education, when added to a general social and technical advance, results in a geometrically increasing need for reliable examinations of all kinds. Not only is there need for more examinations of the kinds now given, but there is also a need for new types of examinations. In addition, the Council is continually taking over some examinations previously given by other examining bodies.

Rapid expansion of the Council has brought many problems. At times it has appeared that large-scale testing was not working too well, but there has been an ever-pressing demand for it, both in government and in the private sector. The Council constantly strains to meet the demands placed upon it, and in recent years there has been a growing feeling that a reorganization is necessary. As a result of this feeling about reorganization, the Administrative and Finance Committee of the Council in May 1968 authorized a survey by a British management consultant firm, The P-E Consulting Group. The resultant three-month survey had three purposes: (1) to examine past recommendations; (2) to propose and obtain agreement on the measures required to be taken; and (3) to formulate plans of how best to implement any suggested changes.

Reports issued by the P-E Group were presented to the Administrative and Finance Committee in September 1968 and an agreement was made with the P-E Group for a one-year implementation of the suggestions of their consultant. This one-year implementation, started in January 1969, is intended to make the Council more efficient and to insure greater accuracy and promptness in examining procedures. From all indications the P-E Group will be effective in its implementation.

3. THE TEST DEVELOPMENT AND RESEARCH OFFICE (TEDRO)

A. Purpose

The purpose of this office of the Council is very accurately described in its name, for its broad aims are research and development functions related to testing. TEDRO has three primary responsibilities: (1) to initiate and coordinate all objective test development within the Council; (2) to establish aptitude testing services within the Council member countries; (3) to initiate, plan, and execute research on tests and testing procedures.

TEDRO serves as a focal point for many institutions of West Africa with respect to research and testing. Professionals from all sectors who are interested in testing come to TEDRO for advice, testing services, and training. TEDRO thus has an unparalleled opportunity for leadership in the West African professional community. It coordinates many aspects of educational testing within that community and brings West African countries closer together in formulating their educational goals. TEDRO also has an important impact on the business and industrial sectors through its aptitude testing programs. These improve the use of manpower resources through the refinement of manpower selection procedures. In the area of research TEDRO has many opportunities. Research to date has primarily been concerned with determining the validity of several selection and achievement testing programs. Because of operational demands, and limited professional personnel, more basic research has not been practicable.

B. History

The history of TEDRO is amply described in various previous project reports but a brief statement of its background is presented here for continuity. TEDRO began in March 1966 as an integration of the Nigerian Aptitude Testing Unit into the West African Examinations Council. Its purposes were to provide objective testing for the entire Council. Unlike NATU, which served only the needs of Nigeria, TEDRO was established to serve all member countries of the Council: Nigeria, Ghana, Sierra Leone, and The Gambia.

C. Organization

TEDRO is one of the six offices of the Council. The structure of TEDRO, and its relationship to other Council offices, is shown in Table 6 (page 54). The Table shows the Headquarters Office and five subsidiary locations. TEDRO is located at Lagos and Accra, but it is international in its responsibilities.

The highest administrative officer of the Council is the Registrar, based at the Headquarters Office in Accra. Directly responsible to him are six officers. These are the Senior Deputy Registrar, Nigerian National Office, Lagos; the Deputy Registrar, Ghana National Office, Accra; the Director, TEDRO, Lagos/Accra; the Senior Assistant Registrar, Freetown Office, Sierra Leone; the Representative, Bathurst, The Gambia (not shown in Table 6); and the Representative, London Office, England.

TEDRO has five professional Sections located at Lagos. In addition, there is an Accra representative of TEDRO, assigned to the Headquarters Office. Responsibilities of the five Sections and the Accra representative are fully described below in Section 3.H.

D. Financial Support

Financial support for TEDRO has been both internal and external over this reporting period. Internal support has been from the member countries of the West African Examinations Council: Nigeria, Ghana, Sierra Leone, and The Gambia. External support has been from the United States (Contract AID/afr-199, Task Order No. 3), two grants from the Ford Foundation, and nominal support from the British Council. All of these sources of support will continue for the next few years. Beginning in January 1969 the governments of the member countries of the Council are fully committed for the foreseeable future. USAID will have extended its support to the Council for four years under a new regional contract, the Ford Foundation will be committed to five and one-half more years of a training grant, and the British Council is planning to extend its assignment of an English Language specialist. Details of TEDRO support are in Table 7 (page 55), which shows percentages of financial contributions from internal and external sources.

E. Technical Advisors

During the present project six USAID Technical Advisors have served in Nigeria. Together they have contributed approximately ten man-years of service toward test development and research. During the first phase of the total project, Advisors often served in operational roles, but project development has enabled gradual assumption of administrative and professional responsibility by West African staff. During phase three of the total project, which is that portion covered by this report, only one position, that of Director of TEDRO, has been occupied by an Advisor. This position has been held by the AIR Chief of Party during the third phase of the project. Eventually a West African will assume the Directorship, but until the Council selects a suitable candidate it is planned that the position will be occupied by the Contract Chief of Party.

All Technical Advisors during the third phase of the project are listed in Table 8 (page 56). Advisors have been assigned to specific Sections of TEDRO on the basis of their backgrounds and interests. They have also been often involved in Committee work of TEDRO and the other Offices of the Council, and thus their advising is extended beyond a single Section of

TEDRO. Advisors often have been called upon for advice in the community, and their presence has had benefits beyond those specified within the contract.

One advisory position during the third stage of the project has been provided through an arrangement whereby the British Council has assigned an English Language Specialist to TEDRO for advising to the Secondary Achievement, Technical and Commercial, and Secondary Selection Sections of TEDRO.

Brief resumes of the USAID/AIR advisors who have served on the project are presented below.

Richard R. Rowe, Ph.D. Dr. Rowe arrived in Lagos in December 1963, under Regional Contract ICAC-2155. His main task was the establishment of a viable testing unit, the Nigerian Aptitude Testing Unit, and by May 1964 he had arranged for the first meeting of the Board of Governors of the Unit. In July of 1964, Dr. Rowe spent several weeks with the Liberian Testing Center in Monrovia. In September 1964 the Nigerian Aptitude Testing Unit began operations. In October 1964 Dr. Rowe was appointed Chief of Party of ICAC-2155. When AID/afr-199, Task Order No. 3 began in January 1965, Dr. Rowe was appointed Chief of Party of that project. His work over the year 1965 was largely responsible for the establishment of TEDRO. Three other team members had arrived during Dr. Rowe's three-year tour, and at the end of his tour in December 1966, he left an operating office and a contract team to continue the growth of that office.

Victor J. Cieutat, Ph.D. Dr. Cieutat arrived in Nigeria in July 1966. His first assignment was as advisor to the Professional and Higher Academic Examinations Section. Dr. Cieutat was nominated as Chief of Party for the contract, a position he assumed upon the departure of Dr. Rowe. Dr. Cieutat was also Acting Director of TEDRO during his tour. Research projects undertaken by Dr. Cieutat included a statistical factor analysis of the I-D aptitude tests and various validity studies. Dr. Cieutat was instrumental in securing a training grant from Ford Foundation for overseas and in-house training of TEDRO and other Council staff. He administered this grant during its first 18 months and arranged for several West Africans to begin training in the U.S.

James G. Snider, Ph.D. Dr. Snider first came to the project as consultant for the period April-June 1968. At the end of that time he was transferred to project field staff and was appointed Chief of Party upon Dr.

Cieutat's departure from Nigeria in October 1968. Dr. Snider also became Acting Director of TEDRO at that time. Research projects worked on included a statistical analysis of the I-D tests, the development of an experimental version of machine-scored manual and finger dexterity tests, and the writing of an article for publication in West Africa titled "Aptitude Tests for West Africa."

Sinai I. Frenkel, Ph.D. Dr. Frenkel arrived in Nigeria in July 1966. His assignment was as Advisor to the Commercial and Technical Section of TEDRO, a position he maintained throughout the period until the end of 1968. In early 1967, with the granting to TEDRO of a Ford Foundation training grant, Dr. Frenkel became Director of Training for TEDRO. His responsibilities in this post were primarily for in-house training, including TEDRO summer training courses and special test administration courses for the West African community. Dr. Frenkel was also involved in some aspects of overseas training for TEDRO senior staff. He participated in various research projects, including most notably the development of managerial selection scales and the revision of several of the aptitude tests developed in earlier projects.

Richard T. Johnson, Ph.D. Dr. Johnson arrived in Lagos in October 1965. Dr. Johnson's primary qualifications were in the areas of measurement and evaluation, guidance and counseling, and statistics and data processing. He was responsible for two academic sections of the Nigerian Aptitude Testing Unit as well as the development of computerized systems for processing examination results and for statistical analysis of research data. Dr. Johnson's efforts in this direction resulted in the installation of a 360/20 IBM system at Lagos. Dr. Johnson also undertook extensive computer programming and training of computer personnel. He returned to Nigeria under the auspices of Ford Foundation on two occasions in 1968 to do further programming and training.

David J. Fitch, Ph.D. Dr. Fitch arrived in Nigeria in December 1967. He was assigned as research and computer consultant in TEDRO. Dr. Fitch participated in numerous research projects in TEDRO and was Chairman of the Computer Committee for the Council. Dr. Fitch worked particularly on the design of standard answer sheets for the large testing programs of the Council and was instrumental in streamlining many answer sheet processing problems in the Council. Dr. Fitch was also concerned with computer planning

for the Council, and especially for the needs of scientific computer utilization within TEDRO. Within TEDRO Dr. Fitch was assigned to the Research, Evaluation, and Statistical Analysis Section. He helped coordinate research projects within the Council, and was instrumental in originating programs of test construction in agriculture and nursing. During the latter part of 1968, Dr. Fitch taught a course at the University of Ibadan under a special agreement between TEDRO and the University.

F. West African Staff

The entire professional and administrative staff of TEDRO is composed of West Africans except the Director of the Office and the Technical Advisors. Table 9 (page 57) contains the names, degrees, and positions of the professional staff of TEDRO as of 31 December 1968. Table 10 (page 58) summarizes the TEDRO support staff as of the same date. Of the total professional and administrative staff of TEDRO, which has been about 50 during the third phase of the project, all except the advisors are West Africans. The only staff salaries funded by USAID are those of the Contract Technical Advisors (Table 9), the Confidential Secretary for the Office Director (Table 10), and the two drivers for the USAID vehicles assigned to the contract team. Advisors have been paid by contract funds and the other salaries by the USAID Mission to Nigeria.

G. Survey of TEDRO-Developed Tests Administered During Calendar Year 1968

Uses of TEDRO-developed tests for 1968 are summarized in Table 11 (page 59). Statistics for earlier years are given in previous reports. Table 12 (page 61) gives an estimate of applications of TEDRO-developed tests for the total third phase of the project. All testing programs are included in Table 11, whether well-established or in the developmental stage. Most testing programs are annually or semi-annually recurrent and require new sets of tests at least once each year. Some programs require more than one test. Common entrance examinations, for example, consist of a battery of four tests. Because of this, both candidates and numbers of tests are tabulated for each program. During 1968, as shown in Table 11 (page 59), 519,149 candidates were administered a total of 1,590,642 objective tests developed by TEDRO. Over the history of phase three of the project, as shown in Table 12, candidates sat for 3,209,527 objective tests.

H. TEDRO Selection Responsibilities and Programs

At the end of the third phase of the contract period TEDRO was composed of five professional Sections at Lagos with a representative at Accra. Responsibilities and major activities of these Sections are described below. The actions of the various Sections are undertaken within the general responsibilities of TEDRO for the initiation, coordination, and implementation of all objective testing and research within the Examinations Council. Policies and practices of TEDRO are based on guidelines set by an International Test Development and Research Committee and by the National Committees of the Council member countries.

Even though TEDRO develops all objective tests for the Council, the tests are administered by Council employees and representatives in each country where the tests are given. The only exception to this is in the Commercial and Technical Examinations Section of TEDRO, where the training required to administer aptitude tests necessitates that these tests be administered by TEDRO officers or by personnel specifically trained at TEDRO for this purpose. National Offices of the Council supervise administration of all tests of the Secondary Achievement Examinations Section and all common entrance examinations. TEDRO also administers all objective examinations having up to 3,000 candidates.

(1) Secondary Achievement Examinations Section. Objective achievement tests in Nigeria were first used at the secondary school leaving level in 1966. Such tests were used for several subjects at the 'O' or Ordinary Level. This use of objective tests improved the reliability and validity of Council tests and made it possible to test efficiently large numbers of candidates. These first applications of objective tests to educational assessment took place in the Secondary Achievement Examinations Section of TEDRO.

The Secondary Achievement Examinations Section prepares comprehensive reports for secondary school teachers on the basis of objective examination results. These reports indicate weak points in instruction as determined by an analysis of errors made by a representative sample of candidates. Because of the wide syllabus coverage permitted by the large number of items comprising objective tests, these reports to teachers constitute important feedback for improving the focus of instruction at the secondary school level.

This Section prepares objective achievement tests used for the Joint Examination for the West African School Certificate and the General Certificate of Education (WASC/GCE), which is administered in Nigeria each November. It also prepares tests for the General Certficiate of Education (GCE), which is taken in Nigeria, Ghana, Sierra Leone, and The Gambia each June. Most of the 43 subjects at the WASC/GCE and GCE O-Levels are still tested by the traditional (essay) variety of examination. For the seven areas where objective tests are used, about one-half of the examination is still tested by traditional examinations.

As indicated in Table 11, 140,727 objective tests were administered by the Council during 1968 at the WASC/GCE Level. Objective portions of these examinations were all developed by the Secondary Achievement Examinations Section.

(2) Secondary Selection, Guidance, and Evaluation Section. This Section develops tests for use in the selection of students for secondary schools for Council member countries. It also develops tests used in some areas of Nigeria for awarding the Primary School Leaving Certificate. The following Common Entrance Examinations are developed annually: Ghana, Northern Nigeria, Nigeria National, Sierra Leone, and The Gambia. Objective tests have also been developed for streaming second year junior high school students into academic, commercial, or technical courses.

The Section develops tests annually for the Ghana Middle School Leaving Certificate Examination. Tests used in the selection of students for the Teacher Training Colleges and pupil teachers in Ghana are also developed yearly by the Section.

This Section fulfills an important educational selection function in West Africa. Because so few primary school graduates can be accepted by the limited facilities of the secondary schools, it is very important to have these decisions made as carefully as possible. During 1968, as shown in Table 11 (page 59), 1,319,244 tests were given in examinations contributed to by this Section. The total number of candidates involved was 357,808.

(3) Commercial and Technical Examinations Section. This Section develops, administers, and interprets aptitude tests used to select candidates for commercial firms, industries, and technical training institutes. It

organizes recurrent aptitude testing sessions for the selection of applicants to various commercial posts and conducts annual admission programs for the following organizations: Technical College (Ibadan), Comprehensive High School (Aiyetoro), Yaba Trade Centre, Federal Training Centre (Lagos), Secretarial Training School (Ibadan), National Teachers Technical Training College (Yaba), Trade Centers in the Western State, The Watch Repairers School (Lagos), and several others.

In addition to the administration of aptitude tests, this Section conducts test administration training courses for representatives of commercial firms, industries, government ministries and educational institutions, and sometimes helps these organizations with interviewing job applicants.

As a result of requests from commercial and industrial firms, the Section is now developing a set of selection tests which will be useful in selecting upper level management personnel. As of December 1968 the management selection battery was almost ready for trial testing. The battery should be completed by the Fall of 1969 and soon thereafter be available for commercial applications.

Since mid-1966 this Section has been revising the 21 aptitude tests developed in the first two phases of the aptitude testing project. These revisions will up-date the tests and hopefully increase their usefulness.

The work of this Section has been central to the idea of a test development and research office in West Africa. TEDRO began as a continuation and expansion of the Nigerian Aptitude Testing Unit, and this Section has continued, increased, and improved on the work of NATU.

The number of tests given by this Section has steadily increased. In 1967 the Section administered 33,950 tests to 6,790 candidates. In 1968 95,227 tests were given to 11,181 candidates (Table 11, page 50).

It is anticipated that work of this Section will sharply increase during the coming years as a result of the growth of business and industry in West Africa. Through the further training of present staff, and preparations for the hiring of additional staff, the Section should be well prepared for the anticipated increases in testing needs.

(4) Professional and Higher Academic Examinations Section. This Section is responsible for selection into all university-level programs and other post-secondary professional and vocational training. These programs include

the Law Faculty Admission Test, selection of student nurses, selection for teacher training, and higher school selection.

In 1968 the Section was responsible for selection programs of the Nursing Council of Nigeria (361 candidates and 2,527 tests); Advanced Teachers College, Zaria (2,432 candidates and 7,296 tests); University of Lagos College of Education (400 candidates and 400 tests); Nursing Training College, Accra (87 candidates and 609 tests); and Ministry of Health, Ghana (6,153 candidates and 24,612 tests). In 1968 the Section was involved in the administration of 35,444 tests to 9,433 candidates in West Africa.

Work in this Section is expanding at a slower rate than other Sections. Selection at higher levels of education by means of tests is not as often used as at lower levels. This is partly because higher level selection may have already largely taken place due to many previous selection situations. It is anticipated, however, that this Section will remain a viable part of TEDRO.

(5) Research, Evaluation, and Statistical Analysis Section. This Section assists, and is mainly responsible for, the research functions of TEDRO. It is the source of specialized consultation on statistical approaches which are best suited to projects of the other Sections. The Section offers assistance to all Council offices, and one of its functions is to coordinate the entire research program of the Council. During 1968 this Section has participated in extensive planning for the Council. Current projects include studies relating to the development of an oral English examination for use in West Africa and assistance to the British Council Book Box Scheme. The latter program is designed to assess effects on reading skills of introducing sets of books into schools which have not previously had adequate books available. A project is planned to predict job success of agricultural extension workers from biographical data.

It is expected that this Section will become one of the most influential of TEDRO during the coming years. The need for a broad program of research, related to testing and general educational problems of West Africa, will fulfill a critical need in West Africa. This Section should be very influential in conducting such a program. Summaries of many of the research projects of this Section are given below in Section 4.E.

(6) Accra Representative of TEDRO. Since August 1968 a TEDRO officer has been assigned to the Council Headquarters Office at Accra. He has been responsible for the planning, coordination, and extension of TEDRO's work in Ghana, Sierra Leone, and The Gambia. Arrangements have been made to increase the TEDRO staff in Accra to at least three full-time officers, plus support staff. Under the new West Africa regional contract there will be a USAID/AIR Advisor assigned to Accra. The increased volume of work in Accra, in addition to the needs for research into objective testing in Ghana, Sierra Leone, and The Gambia, necessitate this increase in TEDRO staff.

I. TEDRO Professional and Technical Library

The TEDRO library has been operating on a professional level since December 1966, when a full-time librarian joined the TEDRO staff. Library development had been previously provided on a part-time basis by TEDRO professional staff. With the addition of the post of Librarian to the TEDRO establishment, the Nigerian Council Committees made a significant initial step in creating a professional and technical library for the use of the entire West African Examinations Council. The library is also available to interested professionals outside the Council.

(1) Acquisitions. The estimated number of library acquisitions since 1966 is given below. A microfilm reader for library use permits an economical increase in library acquisitions, and efficient use of limited storage space, as many issues of periodicals have been obtained on microfilm.

TEDRO Library Acquisitions (1966-1968)

Books on Hand	2,382
Current Periodical Subscriptions	90
Books on Order	958

(2) Usage. The TEDRO library is used very often as more TEDRO and other Council staff become aware of the utility of such an extensive professional and technical library. Although the use of library facilities by the professional community is encouraged, there so far has been only limited usage by this group. Estimates of library usage over the total life of the TEDRO library are given in the table below.

TEDRO Library Usage (1966-1968)

Attendance	3,500
Book Circulation	
TEDRO	2,621
Nigerian National Office	1,036
Others	150
Total Book Circulation	3,807
Periodical Circulation	475
Pamphlet Circulation	424
Inter-Library Loans	50
Research Topics Reported	30
Bulletins, Newsletters, Bibliographies Prepared	38

(3) Archives. Archives of the Council will be deposited in the TEDRO library on microfilm. The Archives will include question papers for all examinations, registration schedules for all examinations, records of the major Council meetings, results of all examinations, and certain low-usage accounting records.

(4) Financing and Housing. The TEDRO library has partly been financed by a special provision in a seven-year training grant given to TEDRO by the Ford Foundation. The Council provides library space, library personnel, and overhead expenses. It is planned that the TEDRO library will occupy a spacious section of the Nigerian National Office in the Fall of 1969. TEDRO will also occupy office space in the new building. The library is assured of growth both in physical facilities and use during the coming years.

J. Training Program

(1) USAID Participant Training Program. The USAID participant trainee program for the Council began in September 1962. Under this program, seven Nigerian university graduates were sent to study for master's degrees at the University of Pittsburgh. These participant trainees have received master's degrees in educational measurement from the University of Pittsburgh through association with this contract. Their PIO/P numbers and periods of training are given in Table 13 (page 62). All graduated with

a master's degree and four were subsequently employed by the Council. Mr. A. U. Usoro first worked for TEDRO and later was transferred to a senior administrative position in the Nigerian National Office of the Council. In the Fall of 1968 he accepted a position with the Ministry of Education, Calabar. Dr. S. C. Aleyideino, after working for a period at NATU, returned to the United States to complete a doctoral degree. He then returned to TEDRO, in July 1968, and now directs the Secondary Achievement Examinations Section. Mr. M. A. Soriyan returned to TEDRO after his training in Pittsburgh and served until the end of 1968 as Head of the Secondary Selection, Guidance, and Evaluation Section. Mr. Soriyan is now in the United States enrolled in a doctoral program at the University of Pittsburgh. Mr. C. O. Agbenyega attended the University of Pittsburgh from September 1966 to August 1967, under the auspices of the West African Examinations Council as part of the Council's contribution to the project training goals. It is clear that the training of all USAID participants has been well utilized by West Africa. Trainees returned to perform in roles for which their training was specifically planned. Since their return the trainees have worked closely with their USAID Advisors but have held line administrative positions within the Council. This follow-up of academic training has proven invaluable in building a capable West African staff to manage TEDRO.

(2) Ford Foundation Training Grant. The Ford Foundation, in June 1967, awarded to TEDRO a training grant of $392,000. This grant is to finance TEDRO internal and external training programs over a seven-year period. The proposal for this grant was prepared by USAID Technical Advisors. The grant is regarded by the Council as a major step in the development of the educational measurement expertise needed to eventually make TEDRO a viable professional institution, independent of external technical assistance. Goals of the Ford training grant are coordinated with the regional contract for four years of continued AID assistance to the Council.

K. Future Plans

In May 1968 the P-E Consulting Group, a British management consulting firm with offices in several countries throughout the world, was authorized to conduct a survey of the Council operations, with the objective of formulating recommendations for reorganization of the Council. Mr. B. A. Goble conducted a three-month survey and submitted two reports suggesting changes

in the organization of the Council to make the operations more efficient. Of relevance to this report are those suggestions relating to TEDRO. The entire calendar year of 1969 is planned for implementing the suggested reorganization within the Council. The extent of modification to TEDRO has not yet been firmly established, but two points had been agreed upon by all parties within the Council: (1) TEDRO should remain as a distinct office in the Council, and (2) the AID/AIR Chief of Party should continue as Director of TEDRO. Major changes in TEDRO will not come from any reorganization within the Council, they are expected to result from the responsiveness of TEDRO to the testing and educational research needs of West Africa. Already there are signs of interest in areas of testing beyond the former aptitude and achievement testing areas. These interests, which have been shown by various sectors of the community, include intelligence testing, attitude testing, and a beginning interest in personality testing. Intelligence testing and attitude testing will eventually be quite important in the manpower selection and educational testing programs of West Africa. It is in response to those needs that TEDRO will find its greatest utility and its greatest growth potential during the coming years. Because of these needs in the West African community, and because of the creative research potential of the TEDRO staff, test development and research have an expected future of expanding service to the manpower selection and educational resources of the West African region.

4. PROJECT ACCOMPLISHMENTS

Accomplishments during the third phase of the testing program are best reviewed in terms of Activity Targets specified within the contract. Achievements within each Target are summarized below. Most Targets, although basically accomplished, will continue into the new regional contract for refinement and amplification. Note that even without the continued presence of Technical Advisors TEDRO would continue as a functioning independent office staffed by West Africans trained during the contract period.

A. Assist in the Establishment and Mobilization of the TEDRO Recently Established within WAEC (Target A)

Work on Target A was substantially completed by the end of the contract period. The extent of the success is shown in the three following sections by consideration of three aspects of TEDRO: staffing, funding provisions, and training plans.

(1) Staffing. TEDRO is almost completely staffed by West Africans. At the end of the contract period all but one of the permanent established positions, that of Office Director, were occupied by West Africans. All but five of the 46 office staff, including advisors in non-staff roles, were West Africans as of 31 December 1968. Of the professional West African staff, nine hold the master's degree and fourteen hold the bachelor's degree. In June 1968 the first TEDRO west African staff member was awarded a doctoral degree in educational measurement from the University of Iowa. Should USAID support not have continued under a new regional agreement TEDRO would have continued as an effective operational institution.

(2) Funding. Should USAID funding have been discontinued following the end of the contract period, this would not seriously have hampered TEDRO's financial status. Projected expenditures for the Nigerian 1968-1969 fiscal year include only $8,400 of USAID contract funds for operational purposes. Most USAID contract funds support the Technical Assistance Advisors rather than current office operations. Withdrawal of USAID support would thus not have hampered TEDRO's main operations. Most USAID/Nigeria Mission support has consisted of backstopping items for the Technical Advisors. Only the salaries of the TEDRO Director's Confidential Secretary and two contract drivers have constituted financial support for local personnel.

The major portion of funding for TEDRO is provided by the Council member countries. Each country contributes three shillings ($0.42) for each candidate who takes any TEDRO-developed objective tests within that country. These contributions will provide about half of TEDRO's required income for the 1968-1969 fiscal year.

Remaining income is provided by testing fees and direct support from the Federal and State Governments of Nigeria. In addition to these funds, TEDRO's training is funded by the Ford Foundation. USAID has provided Technical Advisors and in addition the British Council has assigned an English Language officer to TEDRO.

(3) Ford Foundation Training Grant. Ford Foundation has given TEDRO a training grant to support all in-house and overseas training for a seven-year period which began in June 1967. Details are given in an earlier semi-annual report and in an earlier part of the present report. A total of 23 man-years

of overseas post-graduate training is planned under the grant. Four summer courses for West Africans, in educational measurement, are provided at TEDRO. When the training is completed TEDRO will have a staff of measurement experts unequalled in West Africa. The grant was negotiated primarily by USAID advisors representing the West African Examinations Council.

B. Continue In-Service Training in TEDRO of WAEC Testing Specialist Counterparts (Target B)

As shown in Table 6 (page 54), all Section Heads of TEDRO have a USAID or British Council external advisor. All West African line administrative officers thus receive on-the-job training in positions of responsibility. Toward the end of the contract period in-service training has progressively been handed over to West African specialists. The need for external supervision of many of TEDRO's routine operations has lessened during the last few months of the contract period. Due to the combined effects of in-service and overseas training there is no longer a critical need for external advisors to continue the routine operations of TEDRO.

C. Continue Development of Former NATU Activities within WAEC (Target C)

Former programs of the Nigerian Aptitude Testing Unit are continued in the Council through the Commercial and Technical Examinations Section of TEDRO. NATU activities focused on aptitude testing. Continuation and growth of these programs within TEDRO is shown by reference to the relative volumes of aptitude testing over past years. The scope of aptitude testing programs conducted by TEDRO for calendar years 1967 and 1968 are shown in the table directly below. Note that the testing volume has increased.

APTITUDE TESTING VOLUME (1967-1968)
Commercial and Technical Examination Section

	1967	1968
Number of Candidates	6,790	11,181
Number of Tests	33,950	95,227

A further analysis of all tests and candidates for the calendar year 1968 is given in Table 11 (page 59). Details for past years are given in previous reports. Projections for the calendar year 1969 show an anticipated increase

in commercial and technical aptitude testing. It is anticipated that testing for the returned Federal Nigerian Armed Forces personnel will constitute a very significant growth factor with regard to aptitude testing. There is an anticipated increase, however, not only in numbers of tests and candidates, but also in quality of testing and quality and diversity of tests available. There has been a steady growth in testing expertise as TEDRO officers have gained experience and training over the years. The quality of tests will also soon be improved with availability of revisions of the aptitude tests. These up-date the content and improve types of items and test scoring procedures. Activities of the Section now responsible for former NATU activities have been expanded by assignment of a senior TEDRO Officer at the Council Headquarters Office at Accra, Ghana. Among other duties, this Officer makes available throughout Ghana, Sierra Leone, and The Gambia the manpower selection services previously only available in Nigeria. It is planned that in 1969 one or two additional TEDRO Officers will be assigned to Accra to further this extension of TEDRO. As reflected by volume of services and additions of personnel, as well as by upgrading of tests, work on this Target is substantially accomplished.

D. Conduct Research on Development and Refinement of Aptitude Tests Suitable for Use in Nigeria and Other West African Countries (Target D)

Much research validating the AID/AIR aptitude tests was accomplished in earlier phases of the testing project. Emphasis in later years has been on the application of earlier developments to manpower selection programs in Nigeria. During 1968 these services were extended to Ghana, Sierra Leone, and The Gambia. There is a current program to refine the present series of aptitude tests. This program involves, for example, the development of alternate forms for nine of the 21 aptitude tests. This specific aspect of the overall refinement was not completed at the end of the contract period, but it will be one of the early accomplished goals of the new regional contract.

E. By Appropriate Research Projects, Investigate the Validity of TEDRO Aptitude Tests for Selection of Candidates for Educational, Industrial, and Governmental Programs (Target E)

Major TEDRO projects related to this Target are summarized below. Other details concerning this Target have been presented in previous reports.

(1) Development of Eastern Region of Nigeria Secondary School Entrance Examination, 1964. Four 60-item objective tests were developed. The tests were Arithmetic, English, Verbal Reasoning, and Quantitative Reasoning. Examination results were submitted to principals of secondary schools.

(2) Federal Advanced Teachers College Selection Study, 1964. A concurrent validation study of five of the I-D aptitude tests, using first- and second-year students, Lagos, Nigeria. Professional, art, and science grades were criteria. The tests were correlated more with professional and science grades then with arts grades. See Summary of Selection Evaluation Finding, March 1964, TEDRO.

(3) Nigerian Army Signals Selection Study, June 1964. A study to determine the usefulness of I-D aptitude tests in predicting performance of military packers and shippers. Low correlations were obtained between test scores and average management ratings of ability. Ratings of likeability were highly correlated with ratings of ability. It is therefore likely that it was the managerial ratings that were faulty.

(4) Development and Evaluation of Nigerian Law Faculty Admission Tests. A six-part examination designed for use in admission to law faculties of Nigerian universities. The test battery comprises tests of Verbal Analogies, Antonyms, Reading Speed, Reading Comprehension, Legal Principles and Cases, and Nigerian Legal Information. The tests were administered to first- and second-year law students and the scores were correlated with course grades.

(5) Nigerian Army Technical Group Selection Study, October - November 1964. Army technical trainees were rated by their instructors. The trainees were then given the I-D technical aptitude test battery. Results showed high correlations between aptitude test scores and instructor ratings. Thus the aptitude tests discriminate between high and low performance in the technical course.

(6) Survey of Secondary School Selection Procedures in Nigeria, December 1964 - December 1965. In October 1964 the Nigerian Common Entrance Advisory Committee agreed that an investigation should be conducted into secondary school entrance procedures and entrance examinations in the Federation of Nigeria. Questionnaires were sent to 17 schools using the WAEC Common Entrance Examination, 11 schools using the Northern Nigeria Common Entrance

Examination, and 142 schools using no common entrance examination. The survey revealed that (1) the entrance examinations usually consisted of achievement papers in Arithmetic and English, (2) no aptitude tests were given, and (3) entrance examination scores were not being compared with subsequent performance in the secondary schools.

(7) Development of Eastern Nigeria Secondary School Entrance Examination, 1965. The tests comprised English, Arithmetic, Verbal Aptitude, Quantitative Aptitude, and English Composition. Two forms of the tests were prepared, and results were reported to principals of schools.

(8) Development of WAEC Common Entrance Examination, 1966. Five tests were developed for the examination: English, Arithmetic, Verbal Aptitude, Quantitative Aptitude, and English Composition.

(9) Management Selection Study. An investigation of the characteristics of good and poor managers in Nigeria. Interviews with managers were conducted and more than 500 examples of successful and unsuccessful management behavior were collected. These are used as the basis for development of management selection tests for use in West Africa. The Nigeria Employers' Consultative Association and the Nigeria Institute of Management are cooperating in this project. One hundred items have been written and thirty are nearly ready for trial testing as of December 1968.

(10) Development and Evaluation of the Common Entrance Examination to Schools of Nursing (Nigeria and Ghana). Selection into Schools of Nursing is by means of a battery of I-D aptitude tests, Nursing Information, English Composition, and a Nurses' Omnibus Inventory. The latter is composed of an Attitude Scale and a Biographical Data Blank. Data are being collected for a predictive validation study. Criterion data will be scores obtained in courses at the Schools of Nursing.

(11) Development of an Extended Interview Test Battery for the Civil Service Examination. Entry into certain classes of the Civil Service is by written achievement tests and an oral interview. It is proposed to develop, in addition to these, tests which will measure non-achievement qualities desired in the Civil Service (e.g., responsibility and reliability, leadership, creativity, etc.). The tests being developed are Biographical Data Blank, Activity Preference, Verbal Analogies, Planning and Scheduling, Essay of Self Criticism, Special Departmental Tests, Group Interview, and

Individual Interviews using rating scales. There shall be seven separate scores and a profile of each candidate's abilities will be plotted. This will help the Public Service Commission decide on a candidate's strong and weak points. This project has been inactive for some time but will be resumed in January 1969.

(12) Development of a System for Annual Evaluation of Secondary School Selection, December 1965 - December 1966. This involved the development of procedures and evaluation data form for the annual evaluation of Secondary School Selection tests. The tests to be evaluated are four objective tests: Arithmetic Achievement, English Achievement, Verbal Aptitude, and Quantitative Aptitude. The criteria for the evaluation of these tests are school grades on end-of-year examinations in English and Mathematics, and overall grades in all subjects. The system involves permanent cumulative records of the academic performance of secondary school students.

(13) Evaluation of Police Academy Selection Procedures, February 1966 - April 1966. Selection tests were developed by the Police Academy. They were Dictation, English Composition, General Knowledge, and Arithmetic. Scores on these tests were correlated with grades earned during the training course. English Composition and Arithmetic were not good predictors and General Knowledge, Arithmetic, and Dictation were acceptable. The following recommendations were made to the Police Academy: (1) introduce an objective English Paper; (2). make the Dictation test objective in format; (3) improve the Arithmetic test; and (4) include an interest inventory.

(14) Predictive Validity of Scholastic Aptitude Tests for University Selection. The University Series is a series of tests developed for selection of applicants to institutions of higher learning. The purpose of this current study is to determine whether these tests predict success within several University Faculties (e.g., Arts, Science, Agriculture, Medicine, and Social Sciences). For each University Faculty, scores on the test battery will be correlated with grades in each subject and the overall grades. These tests have not yet been used for selection but they have been administered to preliminary and first-year students at the University of Ibadan during 1965 and 1966. Criterion data for the Arts and Science Faculty at the end of 1965/66 Session were collected. Criterion data have also been obtained for preliminary and first-year students in the Faculties of

Education, Agriculture, Social Sciences, Arts, Science, and Medicine. There will be follow-up of the 1965/66 and 1966/67 preliminary and first-year students. The study will be extended to other universities in Nigeria. On the basis of the findings in Nigeria, the tests will be revised and then validated in other West African universities.

(15) African-American Institute Scholarship Selection. Selection of recipients of scholarships for study in the United States is done by the use of objective aptitude tests and interviews. An evaluation of this selection procedure was reported to the African-American Institute.

(16) Common Entrance Examination Statistics, 1966 (Nigeria). This is a study of the 1966 three Common Entrance Examinations to Secondary Schools in Nigeria - the National, the Northern Nigeria, and the Eastern Nigeria Examinations. Each examination consisted of four objective tests. Arithmetic, English, Verbal Aptitude, and Quantitative Aptitude. Score distributions for each examination did not differ from normal curve form, except that the low ends of the distribution were truncated. The questions were of such difficulty that it was easy to select the top 20 percent of the candidates for interview. A factor analysis was performed on the data. In each examination the various tests were not as independent as was expected. For example, the Verbal Aptitude Paper of the National Examination had a very high loading on the numerical factor. It was therefore recommended that (1) new types of items should be constructed in the two aptitude tests in order to make them less achievement-oriented, and (2) the Arithmetic test should be written with careful attention to using simple vocabulary so that knowledge of English does not affect Arithmetic scores.

(17) Validity Study of I-D Tests for Selection into Yaba Trade Center. Scores of 151 students at the Yaba Trade Center were obtained on a selected battery of five aptitude tests. This study investigated the usefulness of these scores in predicting school grades one and two years after admission. Correlations between the test scores and the grades were found. Low correlations were found between aptitude test scores and school grades. This may have been due to the fact that students came from 12 different classes and course grades were not comparable between groups.

(18) Item Selection Procedure in TEDRO. A summary is presented of the procedures used within TEDRO for the construction of new tests. It describes

preparation of items, trial testing, and the computer-produced analyses used to separate usable items from those which are statistically unsound.

(19) Validity Study at Comprehensive High School, Aiyetoro. A battery of four academic tests developed by the staff of the Comprehensive High School, Aiyetoro plus one TEDRO test were used to predict grades in English, Oral English, Mathematics, Science, and the Social Studies. Data analysis was performed by TEDRO and reported to the Comprehensive High School.

(20) Evaluation of Secondary School Selection Tests (Ghana and Nigeria). The main goal of this project is to investigate how well aptitude test scores predict school success as measured by school grades and grades on the West African School Certificate Examination and the GCE Ordinary Level. To the extent that the selection tests possess sufficient validity, to that extent their use for selection is justified. A secondary goal is to determine in what proportions a student's scores on the selection tests should be combined for most effective prediction. A report was issued in April 1968. This report summarized a two-year evaluation of the 1963 Federation of Nigeria Common Entrance Examination to Secondary Schools and a one-year evaluation, at the GCE Ordinary Level, of the Ghana Common Entrance Examination to Secondary Schools. The report shows that the selection tests predict secondary school success and that the tests should be improved to increase their predictive validity.

(21) Validity of I-D Aptitude Tests for Selection into Technical and Commercial Courses. This study evaluates predictive validity of the I-D tests for selection into general technical and commercial courses and determines which tests are most suitable for selection to specific courses. Nineteen aptitude tests were administered to 398 applicants to the Government Technical College, Ibadan, and 139 of these applicants were subsequently admitted. Course grades of the 139 students over three terms were correlated with their scores on the selection tests. Results indicate most of the tests used for selection predict course grades reasonably well. A few, however, do not reliably predict grades. On the other hand, two tests not usually used previously were found to correlate well with grades. On the basis of these results, a new battery of tests is recommended for technical and commercial selection. The follow-up study will continue until the students leave the college at the end of the present year. At that time a final report will be prepared.

(22) Validity of I-D Aptitude Tests for Predicting Academic Success in the Nigerian School of Science. The report concerns the validity of three aptitude tests for the prediction of academic performance in a post-secondary science curriculum. The tests were administered to 292 applicants to the Nigerian School of Science; scores were validated against school grades at the completion of two years of a science course. The battery had no predictive validity for these courses. A different battery is suggested for a subsequent trial.

(23) I-D Aptitude Tests Revision. The I-D Aptitude Tests now in use may soon be over-used in the sense that some applicants for jobs might have taken the same test several times, and that security of the tests might be jeopardized. There is therefore need for alternate forms of the tests. This project started in December 1967. The first stage was the construction of a large pool of more items for the revisions. Trial testing of the items will begin in January 1969.

(24) Development of Standard Answer Sheets for IBM 1230. The main goal is to develop a standard IBM 1230 answer sheet that can meet most of the testing needs of the Council.

(25) Oral English Examination for West Africa. This project is an attempt to design an Oral English Test for the GCE Level. These tests are meant to replace an older test of Oral English which the Council now uses. Trial tests were conducted on a representative sample of schools in Lagos, Kano, Ibadan, and Accra. The oral stimulus items were recorded in the Nigerian Broadcasting Studios and some of the voices recorded were those of West African professional broadcasters. Nigeria, Ghana, Sierra Leone, and English voices were represented on the tape. The test has eight sub-sections which test topics such as contrasts, consonant vowel contrasts, rhymes recognition, consonant clusters, sentence stress, intonation, and comprehension. A comprehensive report was presented to the International Oral English Panel in Accra in September 1968. This report covers areas of study such as intelligibility, validity, difficulty, reliability, and intercorrelation of subsections.

(26) Examination for Selection into Comprehensive High School, Aiyetoro. This testing program is used for selecting entrants to the Comprehensive High School at Aiyetoro. The program started in 1964 when the I-D Aptitude

Tests were used for selecting school candidates on an experimental basis. The experiment demonstrated that the tests were much better predictors of success in the school than the previous selection procedure and the school authorities thus decided to use the tests for future admission programs. Unfortunately, however, the school was unable to make full use of these tests until 1967, due to lack of sufficient funds. In 1965 and 1966, the school requested some of the I-D tests to supplement their own tests. By 1967 the school was able to obtain the necessary approval from the Western Nigeria Ministry of Education to use the I-D tests for its selection programs and TEDRO has since then been handling the selection examination for the school. Candidates' composite scores in the battery are used for selecting those to be admitted, and their scores on individual tests are to be used in guiding them to specific courses which they enter after their first two years at school.

F. Assistance with the Establishment of Testing Services throughout Nigeria and Staffed by Nigerian Specialists (Target F)

Several programs within TEDRO have been devoted to this Target. Training courses in test administration have been conducted for over 100 persons since 1965. Most of these trainees were from commercial, government, and educational units throughout Nigeria. The presence of these trained persons makes the manpower selection services of TEDRO available over a wide geographical area, including Ghana, where during the calendar year 1968 a number of persons were trained in test administration by the TEDRO office in Accra. Council Officers in the Headquarters Office at Accra are being trained in test administration and will be available for testing programs within Council member countries.

G. Indirect Benefits

Projects undertaken in developing countries often result in benefits beyond their immediate objectives. Such benefits of a project are sometimes referred to as the project's "multiplier potential." Testing projects have a high multiplier potential. Administration of examinations on a large scale has effects on generations to come and the effects of tests are felt in all sectors.

Some of the extra benefits accruing in Nigeria as a result of this finished contract are very clear. As a direct result of USAID participant and in-service training, TEDRO presently has two of its staff members in

associate teaching positions with the College of Education, University of Lagos. Dr. S. C. Aleyideino and Mr. J. K. Majasan have been teaching courses at the University of Lagos. It is anticipated that such a relationship with the University will continue and will expand over the coming years. This arrangement has received the full support of the West African Examinations Council, who regard it as an opportunity for the staff of the Council to contribute more broadly to the community in their areas of specialization. From the viewpoint of the University it is a good opportunity for them to gain professorial personnel of a high calibre but at a minimum cost to the University. The TEDRO staff presently teaching at the University believes that teaching helps to sharpen their interests in their areas of specialization in test development.

A second area of benefit relating to the University of Lagos, which is related to this contract, refers to a proposed program for graduate study in education at the University. TEDRO senior staff are involved in a series of committee meetings to determine a new curriculum to constitute a graduate Diploma of Education, for up to 300 Nigerian school officials per year. A second objective is to develop a graduate faculty capable of assisting in establishing a body of educational research in Nigeria. The presence of contract staff, and of contract-trained staff, has been very helpful to University of Lagos officials, who often call upon TEDRO staff for advice and consultation. The contract has thus had an important indirect benefit to the development of the University.

A third aspect of the project's indirect benefits in relation to the University of Lagos concerns the planned expansion of University of Lagos computer facilities. Contract-connected personnel have been involved in the basic planning for a University of Lagos Computer Center. Dr. R. T. Johnson, who was present in Nigeria under the AID contract in 1965 and 1966, consulted in Nigeria in December of 1968. When there in December, he conferred with officials at the University of Lagos and IBM/Lagos concerning the proposed Institute of Computer Sciences, University of Lagos. Dr. Johnson addressed such problems as: (1) What does the volume mean to the Institute? (2) What are the volume cost estimates for training students? and (3) What is the market in Nigeria for the quantity and quality of graduates? These and other probing questions which were partially answered

by Dr. Johnson, in his brief consulting visit, have been most useful to those concerned in planning for the Institute.

During the term of the contract the number of indirect benefits has been numerous, although at times difficult to catalog. Staff are often asked to comment on current university research, and officials of many other institutions in the community have received informal advice on test-connected matters. These benefits have not only been related to Nigeria, but also to Ghana, Sierra Leone, The Gambia, and of late Liberia and the community of East Africa. The contract team in the West African Examinations Council has for over two years provided services and consultation for the Government of Liberia, including annual arrangements for the printing in Nigeria of the Liberian National Examinations. Since Liberia is now an Associate Member of the West African Examinations Council, it is expected that the help provided Liberia will continue for many years and will grow in scope and importance.

The most important non-West African benefit of the West African project has been its influence on, and its involvement with, the East African Examinations Council. As a direct result of the work done in West Africa AIR personnel were asked by AID/Washington to advise the newly formed East African Examinations Council (EAEC). In May of 1968 the East African Examinations Council submitted a formal request to AID's East Africa Office of Regional Activities (EAORA) for technical advice to assist the EAEC in identifying areas in which technical assistance may be appropriate. Areas specifically mentioned to be studied included objective testing, statistical analysis of examination results, and related research. A feasibility study of these issues was subsequently carried out by a team of AIR consultants. A total of approximately five man-months of specialist services helped the East African Examinations Council to identify areas that EAEC should emphasize in its development program. Team members included Dr. Victor J. Cieutat, then Chief of Party of the present contract team; Dr. Richard R. Rowe, Associate Dean of Education, Harvard University, and former Chief of Party, West Africa; and Dr. Joel B. Aronson, American Institutes for Research, Pittsburgh. Their efforts in East Africa resulted in a comprehensive body of suggestions to EAEC with reference to its efforts to develop an independent examinations system. The request by the EAEC for

a feasibility study comprised an unusual opportunity for AID, through a newly-established indigenous regional educational organization, to provide assistance to East Africa. The fact that the East African Council is able to benefit from personnel who have had experience in West Africa is an unusually important indirect benefit from AID's West African contract arrangements. It is expected that there will be a fruitful dialogue for many years between the West African and East African Examinations Council. Through these organizations AID will have made an extremely important contribution to regional efforts within the African community to solve its manpower selection and educational assessment needs.

5. REPORT OF CONTRACT ACTIVITIES FOR PERIOD JULY THROUGH DECEMBER 1968

In the work plan for 1 July 1968 through 31 December 1968, submitted as part of the Semi-Annual Report for 1 January 1968 through 30 June 1968, the main objectives set were to (1) continue with in-service training of TEDRO staff, (2) further develop the aptitude testing services, and (3) continue with research efforts. Seven specific projects were selected to receive special emphasis during the six-month period. This section of this report summarizes progress on each of these seven projects through December 1968.

A. P-E Survey

A target set with reference to the proposed Council reorganization was to negotiate with the Ford Foundation for support for a one-year implementation phase to take place during 1969. At the time of the writing of the work plan this seemed likely. However, plans for the P-E Group consultant to come to West Africa in early October 1968 did not materialize and, since no specific plans for the P-E implementation were available in 1968, it was not possible to make such a proposal to the Ford Foundation. The P-E consultant arrived in January 1969 and plans are underway to negotiate with the Ford Foundation for support of this project. In the meantime, the Council is supporting the project.

B. Computer Training and Advisory Program

During the six-month period from July through December 1968 five man-months of computer advisory services were provided to the Council. Details of this advisory plan are reported in the Semi-Annual Report for January through June 1968. This plan was made in response to difficulties in data

processing within the Nigerian National Office of the Council. Arrangements were made for Mr. Michael J. Quirk, of AIR's Palo Alto Office, to spend four months at Lagos and for Dr. R. T. Johnson, formerly of AIR and then at Stanford University, to spend four weeks at Lagos during December.

Mr. M. J. Quirk spent four months consulting with, and providing training courses for, computer staff of the Nigerian National Office of the Council. Mr. Quirk was instrumental in solving most problems related to processing results of the West African School Certificate. He also addressed numerous other related data processing problems in the Council. Mr. Quirk left a summary of recommendations for further training of computer staff, and they have been helpful in the planning of such training. Dr. R.T. Johnson arrived in Nigeria and spent most of December 1968 at the Council. This time was spent working with and training computer staff of the Council. In addition to planning several training practicums for computer staff, Dr. Johnson wrote a series of comprehensive computer programs for processing results of the West African School Certificate and related examinations. Detailed accounts of Mr. Quirk's and Dr. Johnson's consultations have been reported to Ford Foundation, which sponsored their visits through TEDRO's Ford Foundation training grant. Copies of this report are available from the Director's Office of TEDRO.

A portion of the work plan which was not implemented was the training of Council data processing staff in the United States. Because of delaying factors within the Council, overseas training of staff was postponed until May 1969, when it is expected that several computer staff members will visit the Educational Testing Service in Princeton, New Jersey to attend a five-day training seminar arranged by AIR and funded by the Ford training grant. This seminar will contribute to the accurate and timely computer processing of the many testing programs administered by the Council.

C. Reorganization of TEDRO

It was noted in the work plan set in July 1968 that TEDRO was possibly to be reorganized by the P-E Consulting Group. Because of delays in the proposed reorganization, no plans were made concerning the reorganization of TEDRO during the last six months of 1968. It was expected, as of December 1968, that early in 1969 plans concerning the reorganization of the Council and of TEDRO would be forthcoming from the P-E Consulting Group.

Any reorganization plans for TEDRO will be summarized in the first Semi-Annual Report of the regional project which begins in January 1969.

D. Common Entrance Examination

TEDRO has been working with the Nigerian National Office of the Council to promote a Nigerian National Common Entrance Examination for admission into secondary schools. A proposal for such an examination was presented to the Joint Consultative Committee on Education (JCC) at its meeting on 19 June 1968. It was anticipated in July 1968 that action on such an examination would be undertaken during the Fall of 1968.

In November 1968 the plan for a Nigerian National Common Entrance Examination was accepted in principle by the Nigerian Government. As envisioned, the examination would involve approximately 90,000 candidates per year. The examination would be selection for crucial channels of movement in education in Nigeria. The Government of Nigeria wants to give the Common Entrance Examination in 1969, but this is not possible and the date has been set for 1970. Since the examination will utilize objective tests TEDRO will be involved in its construction.

E. Primary School Leaving Certificate

A proposal for a Nigerian National Primary School Leaving Certificate was presented at the same Committee meeting of the JCC referred to immediately above. It was also anticipated in July 1968 that further advances would be made toward the implementation of this examination during the latter part of 1968.

F. Cooperation with Liberia

During late 1967 and early 1968 negotiations with the Department of Education, Government of Liberia, Monrovia, led to a proposal for cooperation between the Department of Education and TEDRO. The proposal subsequently was endorsed by the West African Examinations Council Annual Meeting. A policy paper, dated 19 June 1968, to Mrs. Bertha B. Azango, Director of Student Personnel Services, Department of Education, details the proposed relationship involving TEDRO. A copy of this document is included in the Semi-Annual Report for the first half of 1968.

It was expected that during the latter half of 1968 implementation of the suggested cooperation would take place. In August 1968 TEDRO supervised the printing of the Liberian National Examinations at a private firm in

Lagos. As part of this assistance TEDRO/USAID Technical Advisers edited the Liberian National Examinations and arranged their printing under strict security.

Other than this printing of examinations, no further assistance has been given to Liberia. Although most cordial correspondence has taken place with the Liberian Department of Education, Liberia has made no requests to TEDRO to further implement any of the suggestions contained in the policy paper. TEDRO has encouraged Liberia to take advantage of what it can offer in testing services. It is anticipated that, since Liberia has come into the Council as an Associate Member, a closer relationship may develop relating TEDRO testing expertise to Liberian testing needs.

G. Summer Training Courses in Measurement and Evaluation

As part of the Ford Foundation training grant, a series of eight-week summer training courses are held at TEDRO. The courses are similar to those held by the Educational Testing Service in Princeton, New Jersey. Each summer from 1967 through 1970, ten to fourteen outstanding West African graduates will participate. Participants are selected on the basis of aptitude tests and interviews, and eight to ten of those showing outstanding performance in the course will be offered one-year Research Fellowships at TEDRO. The best of the fellowship holders will be offered permanent staff positions in the West African Examinations Council upon the completion of their one-year fellowship. Educational measurement specialists from the United States will conduct the program each summer. These specialists will enrich TEDRO's other activities by acting as general consultants during their ten weeks in West Africa.

The first training course was held July through August of 1967 and was taught by Dr. E. E. Larré. Of the fifteen participants, six were awarded one-year Research Fellowships with TEDRO. During the Fall of 1967 and all through 1968 these Research Fellows assisted with test development work as part of their training. Three of the Research Fellows subsequently accepted permanent appointments at WAEC. In the 1967 course there were nine participants from Nigeria, two from Ghana, and one from Sierra Leone. No applications were received from The Gambia.

The second course was held July through August of 1968 and was taught by Dr. S. C. Cho, on leave from the American Institutes for Research. The course curriculum consisted of three major topics: (1) basic descriptive

statistics, (2) test construction, and (3) analysis and interpretation of test scores. As part of the course participants constructed an operational English Vocabulary Test. The test was organized and administered by the participants, who tried out the test in local schools. Course reading materials were supplemented by film-strips and tapes on the rules of achievement test construction. All participants were involved in all processes necessary for the construction of a test, from the initial organization and writing of items to the try-out of the items and the subsequent processing of test results on the IBM 360/20 of the Nigerian National Office. Students made extensive use of the TEDRO professional and technical library.

Ten West African graduates were participants in the 1968 course: seven from Nigeria, two from Ghana, and one from Sierra Leone. In addition, there were five participants who were not competing for Ford Research Fellow positions. Of these, two were from Ghana, one from The Gambia, and two from Iran.

Of the ten participants, two were asked to remain as Ford Research Fellows. One of these Fellows was so outstanding that he was appointed to a permanent position with the West African Examinations Council four months after he started his Fellowship. The second Research Fellow will complete his Fellowship in the Fall of 1969.

The addition of the Research Fellows has significantly increased the test development and research capability of TEDRO and is simultaneously serving a critical in-service training function. There is not available in West Africa a graduate level training program in educational measurement and evaluation. The Ford Foundation program, in conjunction with USAID technical assistance, thus provides a level and type of training which is unique in West Africa.

6. FUTURE PLANS

Projected plans lie principally in three areas: Test Development, Research, and Service. These plans are expected to be implemented under a four-year continuation of the present contract on a regional basis.

A. Test Development Targets

There are seven goals for TEDRO with regard to test development.

1. Maintain and improve all current objective testing programs.
2. Develop an Oral English Examination.
3. Develop a battery of Managerial Selection Tests.

4. Develop a Primary School Leaving Certificate Examination for Nigeria.

5. Revise the University Series of tests.

6. Revise the Law Faculty Admissions Battery.

7. Revise the currently used Civil Service Entrance Examinations.

Goals 1, 4, 5, 6, and 7 are under development at present but have no definite finishing date. Goals 2 and 3 are very close to being finished and can be regarded as attainable within 1969. Therefore, 2 and 3 will be discussed as immediate future project plans.

Work on an Oral English examination was started in 1967 and is well on its way to completion. By July 1969 there will be prepared a usable, reliable, and valid group administered objective test of Oral English comprehension for use with large numbers of candidates in West Africa.

The Managerial Selection Scales were also started some time ago, and their completion will form one of the early accomplishments of TEDRO test development in 1969. The Scales will be extremely useful for upper management selection in West Africa.

B. Research Targets

Six research goals are scheduled to start 1 January 1969. They are to conduct validity studies of the:

1. University Series.

2. Nursing Council Common Entrance Examination.

3. Teacher Training Institution Battery.

4. Technical Training College Battery.

5. Common Entrance Examinations.

6. Oral English Examination.

Plans are underway for the testing in early 1969 of 2 and 5. Considerable work has already been done on 6, and more is planned during 1969. Goals 1, 3, and 4 are in process for late 1969. These research targets are of a recurring variety. The need for them will be as great several years from now as it is today. In addition to these specified goals, there is a broad goal of initiating research into the broad problems of education in West Africa.

C. Institution Building

Institution building plans include eight points:

1. Develop Test Development and Research Office.
2. Develop Accra Office of TEDRO.
3. Expand in-service training in TEDRO.
4. Establish computer program library.
5. Conduct courses in item-writing.
6. Coordinate Ford Training Program with USAID support to Council.
7. Develop professional and technical library in TEDRO.
8. Foster TEDRO in-house research capability.

Most of these institution building goals are continuing activities, and most are being realized and improved and expanded on a day-to-day basis. However, goal 4 is new, and very little has been done toward its realization. It will form an important new project for TEDRO and the West African Examinations Council.

D. Service Goals of TEDRO

TEDRO not only produces objective tests for the various national offices of the Council, and for special bodies, but it also provides services directly to the public and private sectors. The most important of these services relate to:

1. Expanding manpower selection services in Nigeria. (This is a continuation of the services of the former Nigerian Aptitude Testing Unit.)
2. Expanding manpower selection services in Ghana, Sierra Leone, and The Gambia.
3. Providing consulting services on research projects, in Council member countries, related to educational problems of West Africa.

With reference to goal 1 above, many details are given in former sections of the present report. Manpower selection in Nigeria by means of aptitude tests has been well established and is being expanded. Also with reference to goal 2, many details have been provided. TEDRO is well on its way to establishing an office in Accra, Ghana, which will further promote objective aptitude testing in that part of West Africa. Developmental plans for that office have been established for a two-year period. Regarding goal 3, the providing of consulting services has long been an important area of TEDRO's activities. Consulting on research projects is one of the main morale-builders of any research office. TEDRO, in recognition of this need, has

specified in its duties of the Research, Evaluation, and Statistical Analysis Section that time shall be provided for research consultation.

In conclusion, the future of TEDRO, and the West African Examinations Council, seems very bright. The manpower selection needs of West Africa are growing, in both the public and private sectors, and the Examinations Council is prepared to meet these expanding needs.

7. INSTITUTION BUILDING

The goal of the USAID technical assistance program is to provide benefits to the cooperating countries extending beyond the termination of specific projects. Continuation of the benefits of technical assistance is possible by establishing local institutions which make available, on a continuing basis, the same services offered by USAID technical assistance advisors. This section presents observations and recommendations on institution building primarily based on AIR's experience with the present project. Some comments below, of a more general nature, are based upon AIR's experience with other overseas institution building projects.

A. Planning and Flexibility

Successful institution building must begin during the planning stages of a project. Project goals should be sensitive both to present and to anticipated needs. Identification of these needs, which often are not immediately obvious, necessitates a close cooperation between the Agency, the cooperating country, and, in some cases, outside professional consultation. Once a project has begun, regardless of the amount of careful planning, it may happen that the specific project targets are not as responsive to local needs as originally intended. Provision should thus be made for modification of project goals on the basis of a developing local situation and/or incomplete planning.

To facilitate this sensitivity to changing needs, the project agreement should specify that the periodic reports from the contractor and the revised work plans are meant to encourage responsiveness to changing needs, and not to assure strict adherence to the original specified project goals. In all specification of current project goals, however, specific completion dates should be established for each goal. These goals should be specified as clearly as possible, so that neither the recipient of the technical assistance,

the contractor, nor the Agency experiences any difficulty in determining whether or not goals have been accomplished. The format for contractor reports should be specified in advance and should indicate that project goals are to be reported individually, with explanations given for any delays in meeting these goals.

The Chief of Party should assure that all members of the contract team are thoroughly aware of both the long- and short-term goals of the project. In order to focus all energies of the team members towards accomplishing these goals, it is recommended that the Chief of Party have each individual advisor submit to him his own work plan, that this work plan be reviewed with each advisor by the Chief of Party, and that the revised work plan be used by the contractor as part of the employees' evaluation. These individual work plans, however, should be reasonably flexible and sensitive to changing needs and priorities.

B. Organization

In cases where institution building is a primary project goal, the contractor, the Agency, and the cooperating government should all be aware that this is the paramount goal of the technical assistance program. To insure that this goal be accomplished, careful planning is needed in three major areas: (1) the training of indigenous personnel and the cultivation within them of attitudes fostering institutional development; (2) local finances; and (3) the phasing out of the technical assistance personnel.

To enhance chances of success, it is recommended that the project be associated with an existing indigenous organization. This could be in the form of a modification of an existing organization or establishment of a subsidiary unit within such an organization. There are several advantages of such an arrangement. A major one is that the project is not perceived as new and foreign and is more likely to be accepted as an indigenous institution. This increases the chances of local cooperation and acceptance. In addition, there are some local personnel immediately available. There is support staff at the very minimum, and in some cases personnel with some professional training. Experience on the present contract supports this contention. AIR initially established a new institution in Nigeria, the Nigerian Aptitude Testing Unit, and the goals of this institution were met

with moderate success. It was not until the project had returned participants and had become a part of the West African Examinations Council, however, that the impact of the project extended to a wide area and was fully accepted within the West African educational community.

C. Finance

Before presenting local support costs for institution building to the cooperating government, it is necessary to clarify to these sponsors how the project will meet local needs. At this point, a realistic estimate of the local costs should be made and presented in detail to the cooperating government. If there are to be costs beyond the project period, these costs must be presented clearly to the cooperating government as an obligation which must continue after external assistance is withdrawn. On contracts such as the present one, where there is an income-producing aspect to the institution being established, this is less of a problem.

D. Training

Careful planning should make information available to the sponsors concerning the numbers and educational backgrounds of trainees to be needed for the project. It should be clarified that the availability of these trainees is as essential to the project as is the provision of local costs. With respect to the initial selection of trainees, safeguards should be instituted, and preferably written into the Project Agreement, to insure that the final determination in the selection of participants be based upon professional standards. An important part of training, and one which we have found difficult to explain to both sponsors and governments, is the necessity to provide for wastage in training programs. In countries where the number of persons with graduate degrees is very limited, it is inevitable that some losses of returned participants will occur through transfers to other organizations or educational institutions, or through the necessity for some persons to transfer to positions of greater effectiveness within government. This latter point should be fully understood and appreciated. Even though an individual may be trained for a specific job within a project, personnel priorities in a developing nation may demand his services in a broader and generally more effective role elsewhere within the country.

We recommend that the contractor's home office maintain close liaison with universities and training institutions in the United States so that

programs may be tailored to the specific anticipated assignment of trainees when they return to their countries. In AIR's experience with universities, we found that student advisors often have little information about the duties which the trainees will be expected to perform after their return. We also recommend, in dealing with universities, that the periods of training be clarified in advance. It should be clearly indicated for a one-year master's program, for example, that the student is expected to return to his country after one year, whether or not he has completed a program or received a graduate degree. Our experiences at the University of Pittsburgh have been very satisfactory with this type of arrangement, and virtually all of our participants have been able to complete the master's program within a single year.

If any participants are to be trained at the doctoral level, we suggest that there be no interval between the master's and doctoral programs. We also recommend that, for any individual trainee, the master's and doctoral program be taken at the same university. This conserves both time and travel funds. Because this usually takes less time than changing universities between degrees, it also permits the returned participant to work for a longer time with the technical advisors. Another recommendation -- and one which we understand is contrary to training practices on many contracts -- is that trainees do not all attend the same university. We feel that the breadth of educational ideas and experiences brought back to the local institutions more than justifies the increased administrative burden of dealing with several universities. With respect to the administration of training funds, we suggest that these be included as part of the contract and not be handled as part of the USAID participant trainee program. This permits more flexibility in the use of funds, reduces the administrative burden of USAID, and shortens the period of time between the selection of a trainee and the beginning of his training program in the United States.

With reference to the location of the research for both master's theses and doctoral dissertations, it is sometimes recommended that this research be done in the cooperating country rather than at the university where the training is taking place. We do not agree with this recommendation on several grounds: (1) universities are geared to giving students the type of supervision and support services needed for a large research project;

(2) students' advisors are always available; (3) computer services are accessible; (4) other researchers working in the same area may be contacted; (5) data is already available on a large number of educational and psychological problems; and (6) research equipment is available in the educational and psychological laboratories involved. The disadvantages of the students doing the research in the cooperating country are: (1) the non-availability of the students' advisors; (2) the conflicting demands of the full-time job to which the trainee usually returns; (3) the inability to contact researchers in the area of his dissertation or thesis topic; and (4) the general unavailability of research equipment and computer services.

E. Advisory Relationships

The functions and responsibilities of technical assistance advisors has been an area of difficulty. These difficulties have been of two major types. In some cases, the advisor tends to view himself as specifically that -- an advisor -- and avoids being involved in day-to-day responsibilities of the project. On the other hand, some advisors assume so much responsibility in daily operations that the local counterparts have little opportunity to assume these responsibilities. Either case presents a difficult problem for the Chief of Party. The classic approach is for the contract personnel working alone to initially assume a functional role with line responsibilities. They continue in these roles with the returned counterparts as understudies, and later become advisors to the counterparts who themselves assume the line responsibilities. Finally, the advisors leave the project entirely to the management of the counterparts.

Implementing the classical approach involves many difficulties, and a number of them within our own experience have been due to the lack of a specific clarification on the part of the Chief of Party concerning what is expected of the advisors. Such clarification should be made both to the contract personnel and to the returned counterparts. Any changes in these roles should also be clarified. We recommend that contract personnel be shifted to advisory roles as soon as possible during a project. The specific responsibilities in these roles should be outlined to them and to the local counterparts. They should be specifically outlined in writing for each member of the contract team, and reviewed and up-dated semi-annually. The Chief of Party should periodically review, with detailed written feedback,

the work of each advisor and the counterpart with whom he is working. In order to facilitate a free exchange of ideas, information, and complaints among the counterparts and advisors, we suggest social contacts with local personnel. There are certain inherent social barriers which restrict such a free interchange, and these can be eliminated through promotion of comfortable social relationships among the advisors and the counterparts.

F. Phasing Out

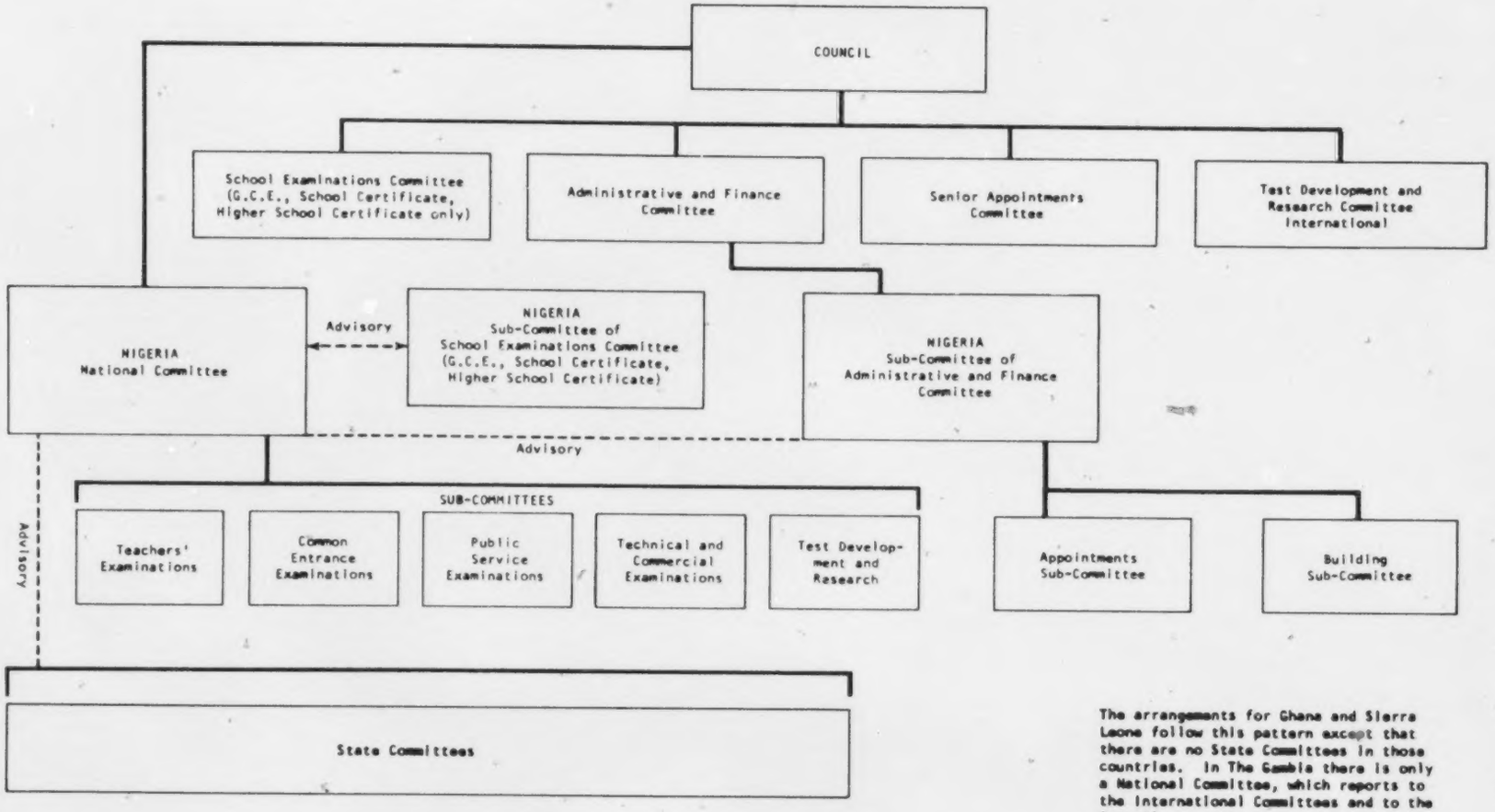
In order to insure institutional viability, it is important that utmost care be given to the phasing out schedule. This should be done on a gradual basis and the full contract team should not remain with the local institution until the last month or last year of the contract. Following termination of the contract, we recommend a long-term consultant relationship with the local institution. This is especially important in a highly technical area such as computer operations.

G. Cross-Relationships

Contacts should be made with as many local institutions as possible, including other donors. This not only reduces the amount of contribution necessary from the Agency, but has a more important advantage of making the institution more acceptable locally. In addition, members of the contract team are placed in contact with professional members of advisory groups from other countries. To illustrate the value of good cross-relationships, our contacts with the Ford Foundation and the British Council have proven to be very useful with the present contract.

Table 1

The Committee Structure of the Council



The arrangements for Ghana and Sierra Leone follow this pattern except that there are no State Committees in those countries. In The Gambia there is only a National Committee, which reports to the International Committees and to the Council.

Table 2

Increase in Number of Candidates Tested from 1954 to 1967

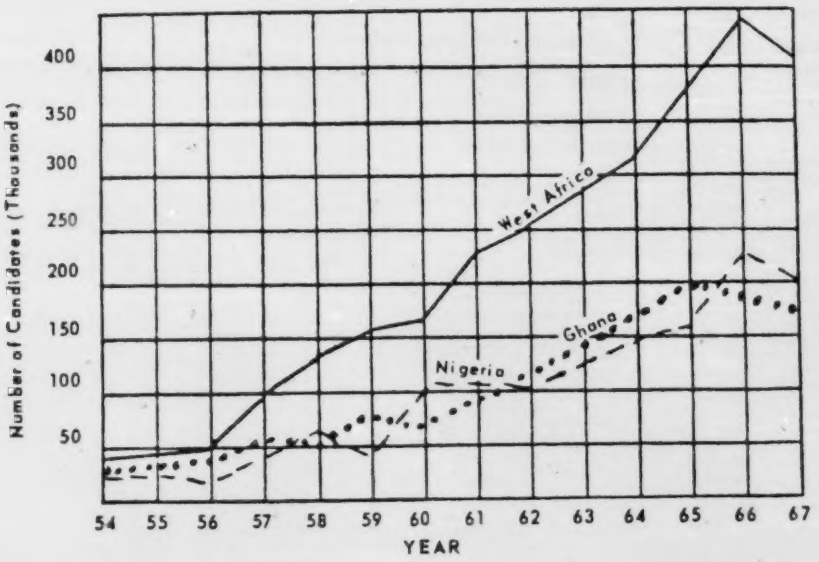


Table 3

Increase in Number of Candidate-Papers from 1954 to 1967

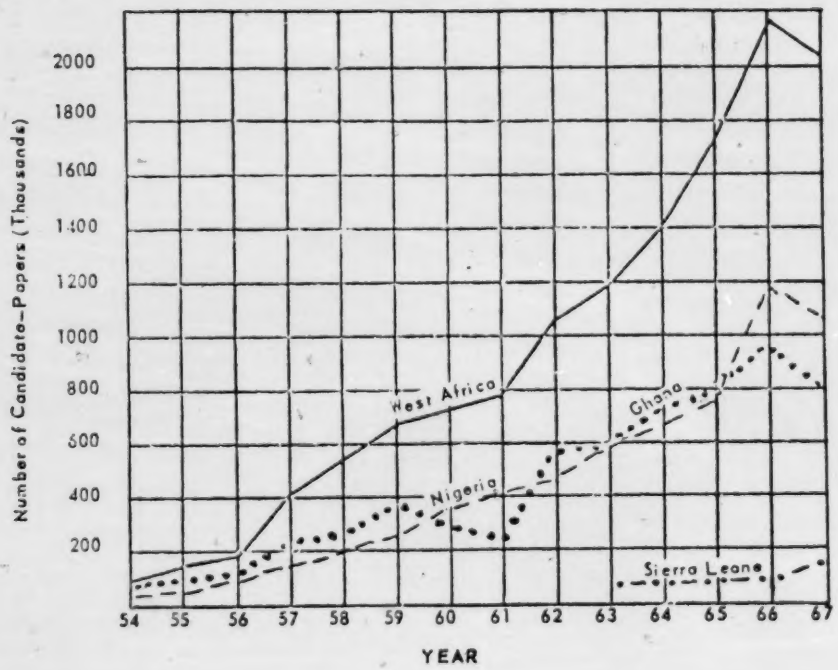


Table 4

Number of Scripts Marked in West Africa from 1954 to 1967

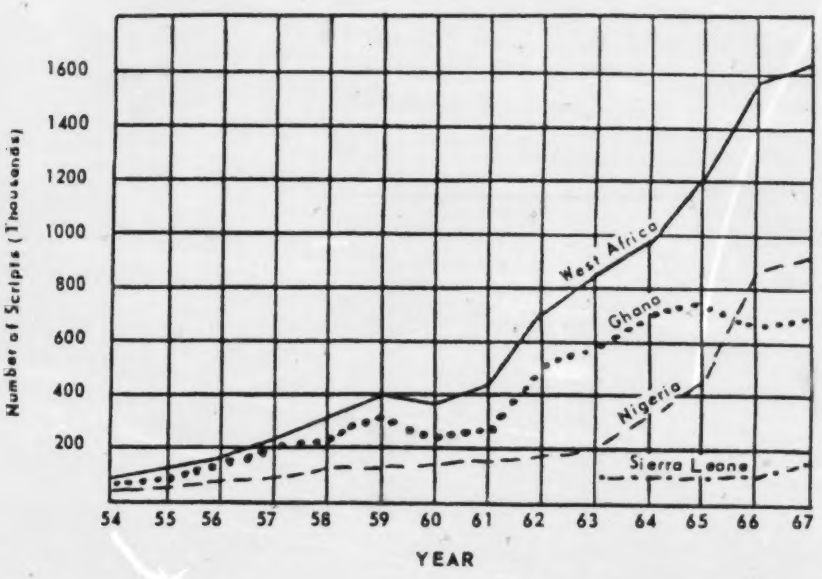


Table 5

Annual Expenditure of the Council from 1955 to 1968

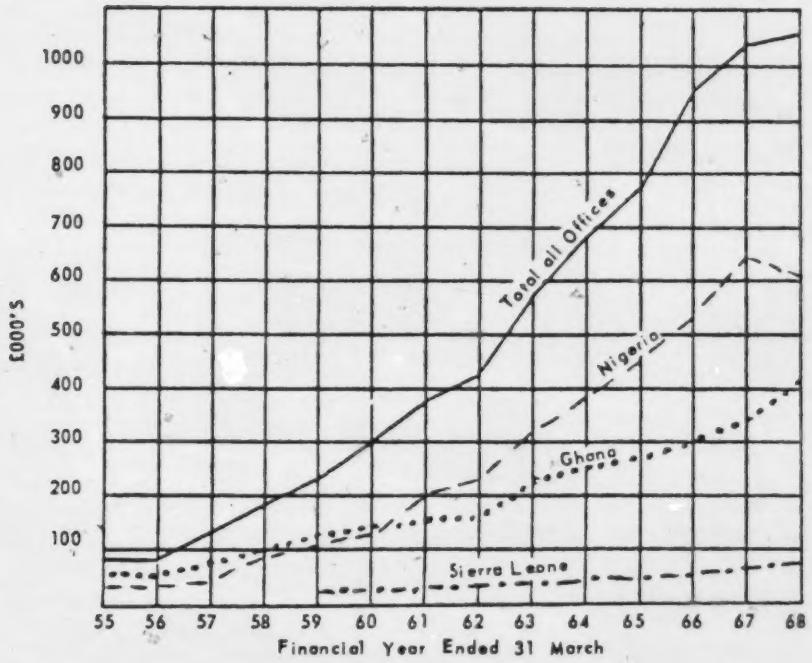
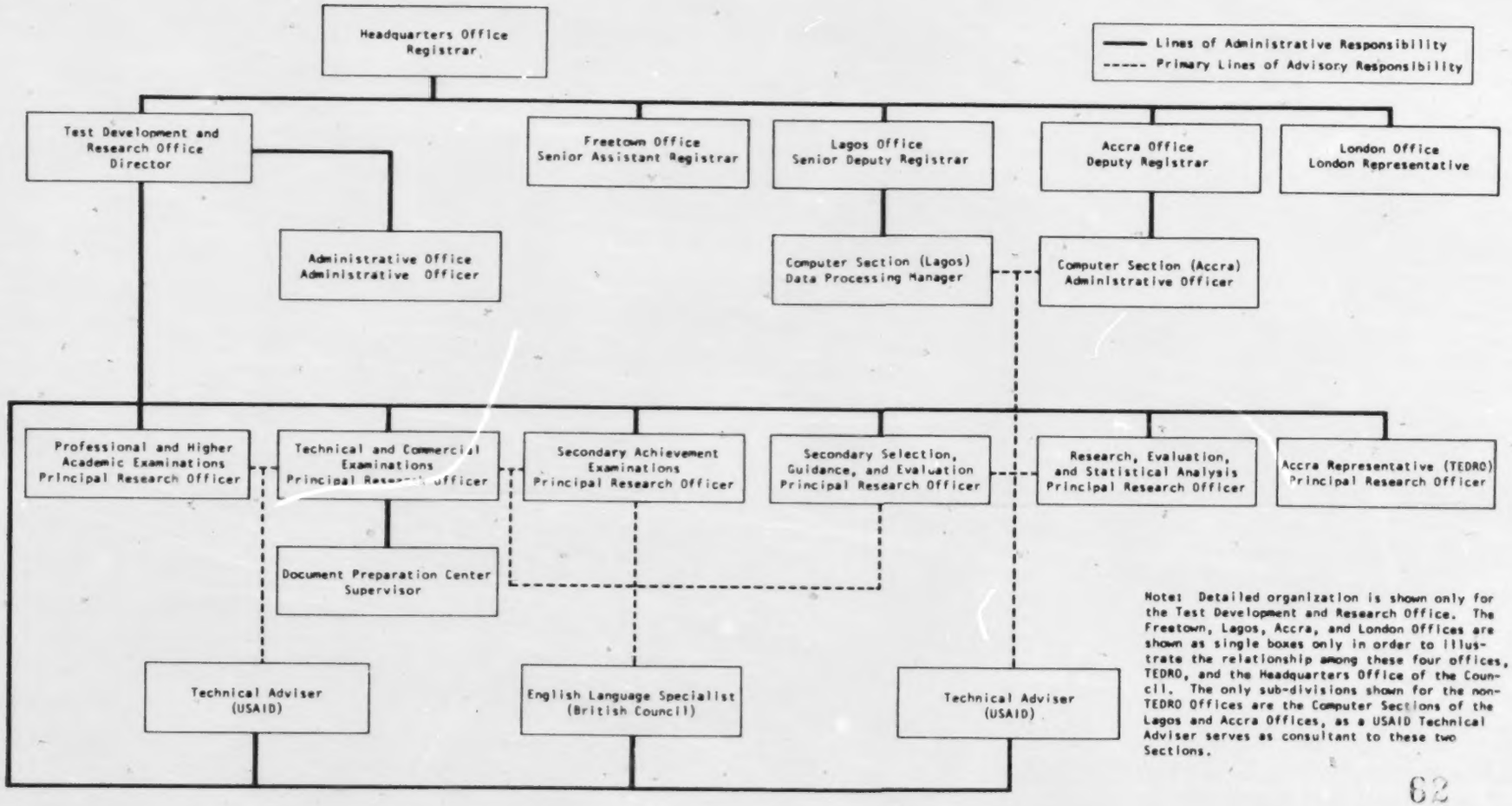


Table 6

Organizational Chart:
Test Development and Research Office
West African Examinations Council


Headquarters Office
Registrar
Lines of Administrative Responsibility
Primary Lines of Advisory Responsibility
Test Development and Research Office Director
Freetown Office Senior Assistant Registrar
Lagos Office Senior Deputy Registrar
Accra Office Deputy Registrar
London Office London Representative
Administrative Office Administrative Officer
Computer Section (Lagos) Data Processing Manager
Computer Section (Accra) Administrative Officer
Professional and Higher Academic Examinations Principal Research Officer
Technical and Commercial Examinations Principal Research Officer
Secondary Achievement Examinations Principal Research Officer
Secondary Selection, Guidance, and Evaluation Principal Research Officer
Research, Evaluation, and Statistical Analysis Principal Research Officer
Accra Representative (TEDRO) Principal Research Officer
Document Preparation Center Supervisor
Technical Adviser (USAID)
English Language Specialist (British Council)
Technical Adviser (USAID)

Note: Detailed organization is shown only for the Test Development and Research Office. The Freetown, Lagos, Accra, and London Offices are shown as single boxes only in order to illustrate the relationship among these four offices, TEDRO, and the Headquarters Office of the Council. The only sub-divisions shown for the non-TEDRO Offices are the Computer Sections of the Lagos and Accra Offices, as a USAID Technical Adviser serves as consultant to these two Sections.

Table 7

Estimated TEDRO Income for Fiscal Year

Ending 31 March 1969 *

Internal			
Government			
Nigeria	$151,709 (27.5%)		
Ghana	57,968 (10.5%)		
Sierra Leone	9,819 (1.8%)		
The Gambia	1,514 (0.3%)		
Total Government		$221,010 (40.1%)	
Non-Government			
Testing Fees	33,600 (6.1%)		
Investment Income	560 (0.1%)		
Total Non-Government		34,160 (6.2%)	
Total Internal			$255,170 (46.3%)
External			
USAID (Approximate)		$161,467 (29.3%)	
Ford Foundation		125,000 (22.7%)	
British Council (Approximate)		10,000 (1.8%)	
Total External			$296,467 (53.7%)
Total			$551,637 (100%)

* Figures in parentheses are percentages of total income. The USAID contribution includes all home office support as well as total costs for the field staff. Excluded, however, are computer rental costs of $36,254 for the period, because The Nigerian National Office of the Council is the main user of the computer rather than TEDRO.

Table 8

USAID/AIR Advisors from 14 January 1965 to 31 December 1968

Advisors	Dates	Principal Post
R. R. Rowe	Jan 1965-Dec 1966	Director
V. J. Cieutat	Jul 1966-Oct 1968	Acting Director
J. G. Snider	Apr 1968-Dec 1968	Acting Director
S. I. Frenkel	Jul 1966-Dec 1968	Advisor: Commercial and Technical Section
D. J. Fitch	Dec 1967-Dec 1968	Advisor: Research, Evaluation, and Statistical Analysis Section
R. T. Johnson	Oct 1965-Apr 1967	Advisor: Research, Evaluation, and Statistical Analysis Section

Table 9

TEDRO Professional Staff,

31 December 1968

Lagos	
Director's Office	
J. G. Snider, Ph.D.	Acting Director (USAID Technical Advisor)
Secondary Achievement Examinations	
S. C. Aleyideino, Ph.D.	Principal Research Officer
S. D. During, B.Sc.	Research Officer
J. A. Osanyinbi, B.A.	Research Officer
A. J. Esisi, M.Sc.	Research Officer
J. A. Gbago, B.Sc.	Research Officer
I. E. Okoli, B.Sc.	Research Fellow (Ford Foundation)
Secondary Selection, Guidance, and Evaluation	
F. O. Guobadia, M.Ed.	Acting Principal Research Officer
A. S. Deen, B.A.	Research Fellow (Ford Foundation)
Commercial and Technical Examinations	
*J. K. Majasan, M.Ed.	Acting Principal Research Officer
E. N. Safo, B.A., M.Ed.	Research Fellow (Ford Foundation)
Professional and Higher Academic Examinations	
*J. K. Majasan, M.Ed.	Acting Principal Research Officer
I. K. Nyamekye, B.A.	Research Fellow (Ford Foundation)
Research, Evaluation, and Statistical Analysis	
M. A. Soriyan, M.Ed.	Principal Research Officer
E. O. Awuwoloye, B.Sc.	Research Fellow (Ford Foundation)
Administrative Office	
E. A. Oyelese, B.Sc.	Acting Administrative Officer
Library	
N. R. O. Oshin, Dip.Lib.	Librarian
Advisors	
S. I. Frenkel, Ph.D.	(USAID Technical Advisor)
D. J. Fitch, Ph.D.	(USAID Technical Advisor)
P. A. Connell, M.A.	English Language Specialist (British Council)
Accra	
C. O. Agbenyega, M.Ed.	Principal Research Officer
On Study Leave	
E. B. Laryea, B.Sc.	Principal Research Officer
S. A. Akeju, B.Sc.	Research Officer

*Mr. Majasan is listed under both Sections for which he currently has administrative responsibility. The total professional staff is thus 23.

Table 10

Summary of TEDRO Support Staff,
31 December 1968

Title	Number
Confidential Secretary	1
Executive Officer (Research)	1
Assistant Executive Officer	1
Testing Officer	1
Supervisor (Document Preparation)	1
Secretary-Typist	2
Stenographer	3
Typists Grade II	2
Typist	1
Machine Operator (Duplicating)	1
Machine Attendant (Duplicating)	1
2nd Class Clerk	1
3rd Class Clerk	4
Clerical Assistant	1
Temporary Clerk	2
Total Support Staff = 23	

Table 11

Estimates of TEDRO-Developed Objective Tests
Administered During Year Ended 31 December 1968

Section	Examination and Date	Candidates	Tests per Candidate	Tests per Examination	
Secondary Achievement Examinations	GCE (June 68)				
	Biology	4,520	1	4,520	
	Chemistry	2,233	1	2,233	
	English	16,311	1	16,311	
	Geography	5,876	1	5,876	
	Mathematics A	4,816	1	4,816	
	Mathematics B	2,693	1	2,693	
	Health Science	2,735	1	2,735	
	Physics	2,006	1	2,006	
	WASC/GCE (Nov 68)				
	Biology	15,646	1	15,646	
	Chemistry	18,165	1	18,165	
	English	20,591	1	20,591	
	Geography	12,329	1	12,329	
	Mathematics A	10,025	1	10,025	
	Mathematics B	7,000	1	7,000	
	Health Science	9,915	1	9,915	
	Physics	5,866	1	5,866	
	Total for Section	140,727			140,727
Secondary Selection, Guidance, and Evaluation	Ghana CEE (Mar 68)	50,458	4	201,832	
	Sierra Leone CEE (Mar 68)	17,500	4	70,000	
	The Gambia CEE (May 68)	2,565	4	10,260	
	Nigerian National CEE (Jun 68)	25,000	4	100,000	
	Northern Nigeria CEE (Mar 68)	60,026	4	240,104	
	Mid-West State CEE (Sep 68)	30,000	3	90,000	
	Ghana Middle School Leaving Exam (Aug 68)	61,265	4	245,060	
	Ghana Teacher Training (Mar 68)	40,994	2	81,988	
	First School Leaving Certificate Exam (Nov 68)	70,000	4	280,000	
	Total for Section	357,808			1,319,244
Professional and Higher Academic Examinations	Nursing Council of Nigeria (Mar 68)	361	7	2,527	
	Advanced Teachers College, Zaria (Mar 68)	2,432	3	7,296	
	College of Education, University of Lagos (May 68)	400	1	400	
	Nursing Training College, Accra (Mar/Apr 68)	87	7	609	
	Ministry of Health, Ghana (Aug 68)	6,153	4	24,612	
	Total for Section	9,433			35,444

(Table 11 continued on following page)

Section	Examination and Date	Candidates	Tests per Candidate	Tests per Examination
Commercial and Technical Examinations	Ministry of Education, West, Selection into Trade Centre (May/Jun 68)	1,885	7	13,195
	Federal Ministry of Establishments, Selection into FTC, Lagos (Jun 68)	270	6	1,620
	Watchmakers of Switzerland Selection into Training Centre, Lagos (Jun/Jul 68)	78	6	469
	Ministry of Education, West, Selection into CHS, Aiyetoro (1st stage) (Jun 68)	998	3	2,994
	Ministry of Education, West, Selection into CHS, Aiyetoro (2nd stage) (Aug 68)	386	9	3,474
	Federal Ministry of Education, Selection into Trade Centre, Yaba (Aug 68)	380	7	2,650
	Nigeria Airways, Pilot Trainee Selection Programme (Aug 68)	22	8	176
	Ministry of Education, West, Selection into Technical College, Ibadan (Sep 68)	775	11	8,525
	Ministry of Education, Mid-West, Mid-West Project in Technical Schools (Apr/Sep 68)	4,500	11	49,500
	Miscellaneous Manpower Selections (Apr/Sep 68)	1,060	8	8,480
	Electricity Corporation of Ghana, Semi-Skilled Manpower Selection (Jul 68)	820	5	4,100
	UTC, Ghana, Selection of Supervisors, etc. (Jul 68)	7	5	35
	Total for Section	11,181		95,227
	Grand Total	519,149		1,590,642

Table 12

Estimate of
TEDRO-Developed Objective Tests
for Total Project
(January 1965 - December 1968)

1965	38,000
1966	308,000
1967	1,272,885
1968	1,590,642
Total	3,209,527

Table 13

Survey of Participant Trainees

Name	PIO/P	Training Period
S. C. Aleyideino	746-20132*	Sep 62-Aug 63
F. U. Madike	746-20132*	Sep 62-Aug 63
S. B. Ogbonna	746-20132*	Sep 62-Aug 63
A. O. Ozigi	746-20132*	Sep 62-Aug 63
A. U. Usoro	746-20132*	Sep 62-Aug 63
J. K. Majasan	746-40329/50093*	Aug 64-Sep 65
M. A. Soriyan	746-50065	Jan 65-Dec 65

*Funded under 747.